MUTOH

User's Guide

SC-PRO

MUTOH

Sign Cutting Plotter

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Dear Customer,

Thank you for choosing a Mutoh SC-Pro series sign cutting plotter. The Mutoh SC-Pro drag knife cutting plotter has been designed to be one of the most user-friendly and versatile cutting plotters in the market.

As a stand-alone cutting plotter, the SC-Pro can cut and plot designs onto PVC or paper as required.

In combination with an inkjet printer, the SC-Pro cutting plotter is ready for contour-cutting of pre-printed signs made with any printer capable of printing onto cutting plotter compatible media. Contour-cutting is made possible via the integrated EPOS (electronic positioning) technology and the in-the-box software.

But even more important, it is easy to use, as the following guide will show you.

TABLE OF CONTENTS

1 Regularisation and safety information 11

1.1 Comply with following regulations 11
1.2 Important notes 12
1.3 Safety Labels 12

2 Product overview 15

2.1 Dimensions 15
2.2 Installation environment requirements 15
2.3 Part names and functions 17
2.3.1 Front of the SC-PRO 17
2.3.2 Rear of the SC-PRO 18
2.3.3 Operation panel 19
2.4 In-the-box contents 20

3 Basics 21

3.1 Installing and replacing tools 21
3.1.1 Installing tools 21
3.1.2 Replace cutter blade 22
3.1.3 Replace auto sheet-off knife 23
3.1.4 Replacing the cutting mat 24
3.2 Handling and storing media 26
3.2.1 Handling media 26
3.2.2 Precaution on storing media 26
3.3 Loading media 27
3.3.1 Loading roll media 27
3.3.1.1 Loading cut vinyl 27
3.3.1.2 Loading pre-printed vinyl 30
3.3.2 Loading sheet media 33

4 Walkthrough the operation panel 35

4.1 Direct key access 35
4.1.1 SHEET OFF key 36
4.1.2 ORIGIN key 37
4.1.3 TEST key 37
4.1.4 CONTOUR CUTTING key 38
4.1.5 SPEED key 41
4.1.6 FORCE key 42
4.1.7 OFFSET key 43
4.1.8 TOOL key 44
4.2 Menu overview 45
4.2.1 Sheet off mode 48
4.2.2 Sheet off margin 48
4.2.3 Auto Shuffle 48
4.2.4 Pre-Feed length 49
4.2.5 Max Sheet length 50
4.2.6 Page mode 51

4.2.7 Origin 52
4.2.8 Laser speed 52
4.2.9 Tool-up speed 53
4.2.10 Job focus 53
4.2.11 Smoothing 53
4.2.12 Factory default 54
4.2.13 Copies 54
4.2.14 Language 55
4.2.15 Emulation 55
4.2.16 Program step 55
4.2.17 VS/ZF/AS 56
4.2.18 ToolSwap Detect 56
4.2.19 LCD contrast 56
4.2.20 Keyboard beep 57
4.2.21 Versions 57
4.2.22 Basic / Full menu 57
4.2.23 Serial communication 58
4.2.24 Network communication 59
4.2.24.1 TCP/IP Address 59
4.2.24.2 SubnetMask 59
4.3 Special key combinations 60
4.3.1 EPOS laser ON 60
4.3.2 EPOS laser OFF 61
4.3.3 Bar code verification 61
4.3.4 Updating the keyboard 62
4.3.5 Reset the keyboard 62
4.3.6 Activate Sheet off knife 63
4.3.7 Factory default 63
4.4 Keys accessible during a cutting job 64
4.4.1 While cutting 64
4.4.2 While pausing a cutting job 64

5 Fine-tuning your cutter 65

5.1 Knife depth 66
5.1.1 Contour cut knife depth 66
5.1.2 Cut through depth 66
5.1.3 Adjusting the knife depth 67
5.1.4 Features of the optional knife holder 68
5.2 Setting the tool force 69
5.3 Offset principle 69
5.4 EPOS test cuts 70
5.4.1 EPOS alignment 70
5.4.1.1 Tools necessary: 70
5.4.1.2 Alignment procedure 70
5.4.1.3 Adjustments if necessary 71
5.4.2 EPOS readout 72
5.4.3 EPOS calibration 73
5.5 Cut through test 76
5.6 XY-Distance Accuracy 78

6 Contour cutting 79

6.1 Different alignment methods 79
6.2 Which Aligning Method should I use? 80
6.3 Square details 81
6.3.1 Hints – tips – recommendations 81
6.3.2 Automatic alignment without barcode 82
6.3.3 Automatic alignment with barcode – single frame 83
6.3.4 Automatic alignment with barcode – multi frame 84
6.4 Cut area measurement 85

7 Maintenance 87

7.1 Cleaning & Daily maintenance 87
7.1.1 Cleaning the grid rolls 87
7.1.2 Cleaning the cutter blade 88
7.1.3 Cleaning the cutting plotter 88

8 Troubleshooting 89

8.1 Checking the communication settings 90
8.1.1 For serial cable connections 90
8.1.2 For network connections 91
8.2 Error messages 92
8.2.1 Recoverable errors messages – no error number 92
8.2.2 Contourcutting errors and warnings 95
8.2.3 Unrecoverable system errors 100

9 Consumables 105

1 REGULARISATION AND SAFETY INFORMATION

Safety terms in this manual are categorized into following three types, depending on the degree of the risk (or the scale of accident)

Safety Terms	Details
WARNING	Must be followed carefully to avoid death or serious bodily injury.
CAUTION	Must be observed to avoid bodily injury (moderately or lightly) or damage to your product
NOTES	Contains important information and useful tips on the operation of your product

1.1 COMPLY WITH FOLLOWING REGULATIONS

The CE marking is a mandatory European marking for certain product groups to indicate conformity with the essential health and safety requirements set out in European Directives.

By affixing the CE marking, the manufacturer, his authorized representative, or the person placing the product on the market or putting it into service ensures that the item meets all the essential requirements of all applicable EU directives and that the applicable conformity assessment procedures have been applied.

This product is tested and approved by the Canadian Standards Association (CSA), this to provide increased assurance of quality and safety.

The product is tested according to IEC60950.
This standard tries to cover all safety aspects.

- Mechanical, electrical
- Choice of components
- Choice of materials: flammability!
- Connectors, cables …
- Fire enclosure
- …

This means the product is safe for users, service personnel and production personnel.

CSA International certification is not a legal commitment but it assures the quality and safety of the machine.

Your product is designed and manufactured with high-quality materials and components, which can be recycled and reused.

When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2002/96/EC – WEEE regulation.

Please inform yourself about the local separate collection system for electrical and electronic products.

Please act according to local rules and do not dispose of your old products with your normal household waste. The correct disposal of your old product will help prevent potential negative consequences for the environment and human health.

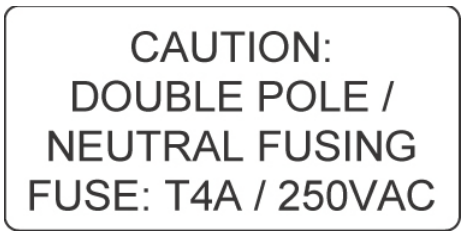
1.2 IMPORTANT NOTES

Technical problems and maintenance, which require the cutter to be opened, can only be done by qualified personnel who were trained to repair this type of machine.

Unauthorized removing of covers and/or overruling safety locks can be dangerous and will result in your guarantee becoming void.

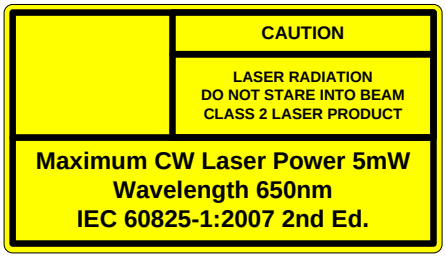
After powering OFF the machine, wait at least 10 seconds before powering ON again. Not respecting this time interval could damage the machine.

1.3 SAFETY LABELS

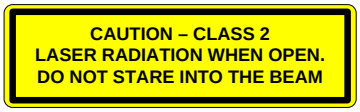


Be careful when servicing this machine. The cutter has two fuses. One neutral and one in phase.

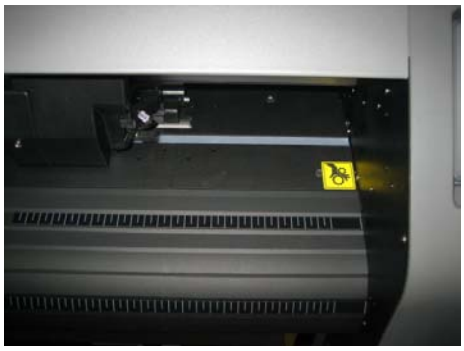
After operation of the fuse, parts of the equipment that remain energized might represent a hazard during servicing.



Be sure not to stare in the laser mounted on the cutting head.



Be careful not to pinch your fingers between the pressure rollers and grid rollers when loading media for example.



Be careful not to get stuck between the following moving parts:

- Cutting head
- Grid rollers

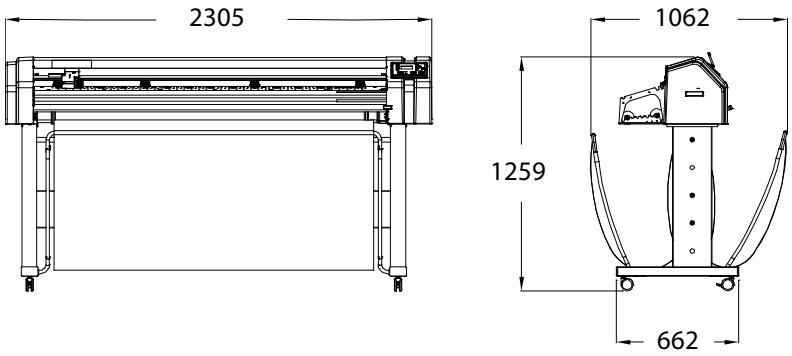
Be careful not to get stuck between the following moving parts:

- Cutting head
- Grid rollers

2 PRODUCT OVERVIEW

2.1 DIMENSIONS

Please find below the sizes of the SC Pro cutter with all dimensions in millimetres.



2.2 INSTALLATION ENVIRONMENT REQUIREMENTS

The location where you set up your equipment is very important. Please see to it that it meets following conditions:

Power supply

- 100 - 240 VAC
- 50 - 60 Hz
- Max. 1.5 A

Ambient Conditions:

Operating environment

- Temperature *5 °C to 30 °C*
- Humidity *35 % - 75 % non-condensing*

Recommended environment (dark area)

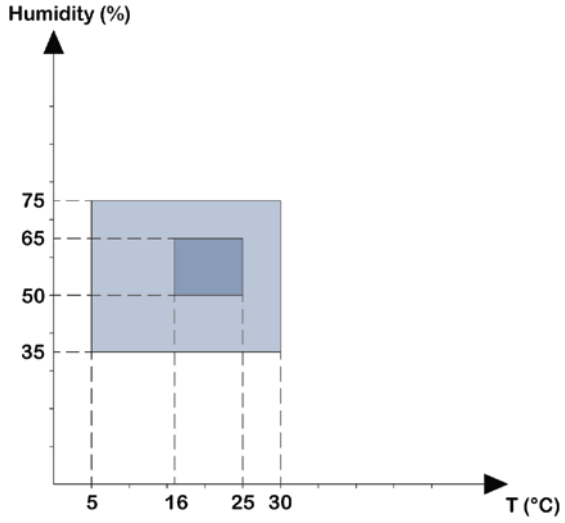
- Temperature *16 °C to 25 °C*
- Humidity *50 % to 65 % non-condensing*

Variation rate

- Temperature *2 °C per hour*
- Humidity *5 % per hour*

Storage environment

- Temperature *0 °C to 50 °C*



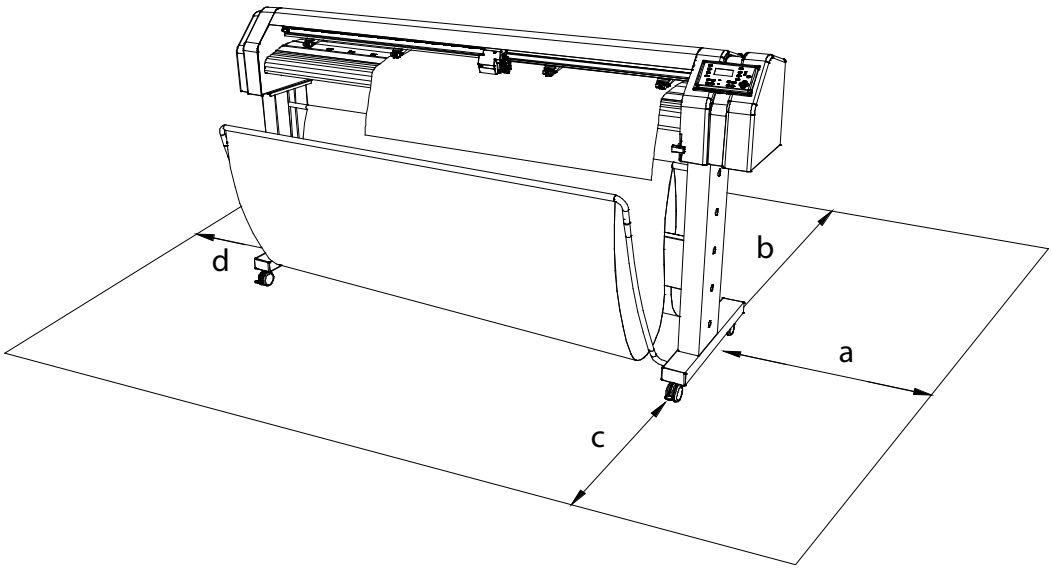
Room conditions

- Please protect your cutter from moisture, dust, draughts and direct sunlight (to prevent possible media detection and epos readout issues). It is best to keep your machine away from open windows and air-conditioners.

- See to it that there is an adequate space around the cutter so that ventilation is not obstructed.

- Avoid unnecessary vibrations and set up your cutter on a level surface.

- Be sure to have some free space on each side of the SC-Pro to ease the operating of it.



a = at least 1 meter

b = at least 1 meter

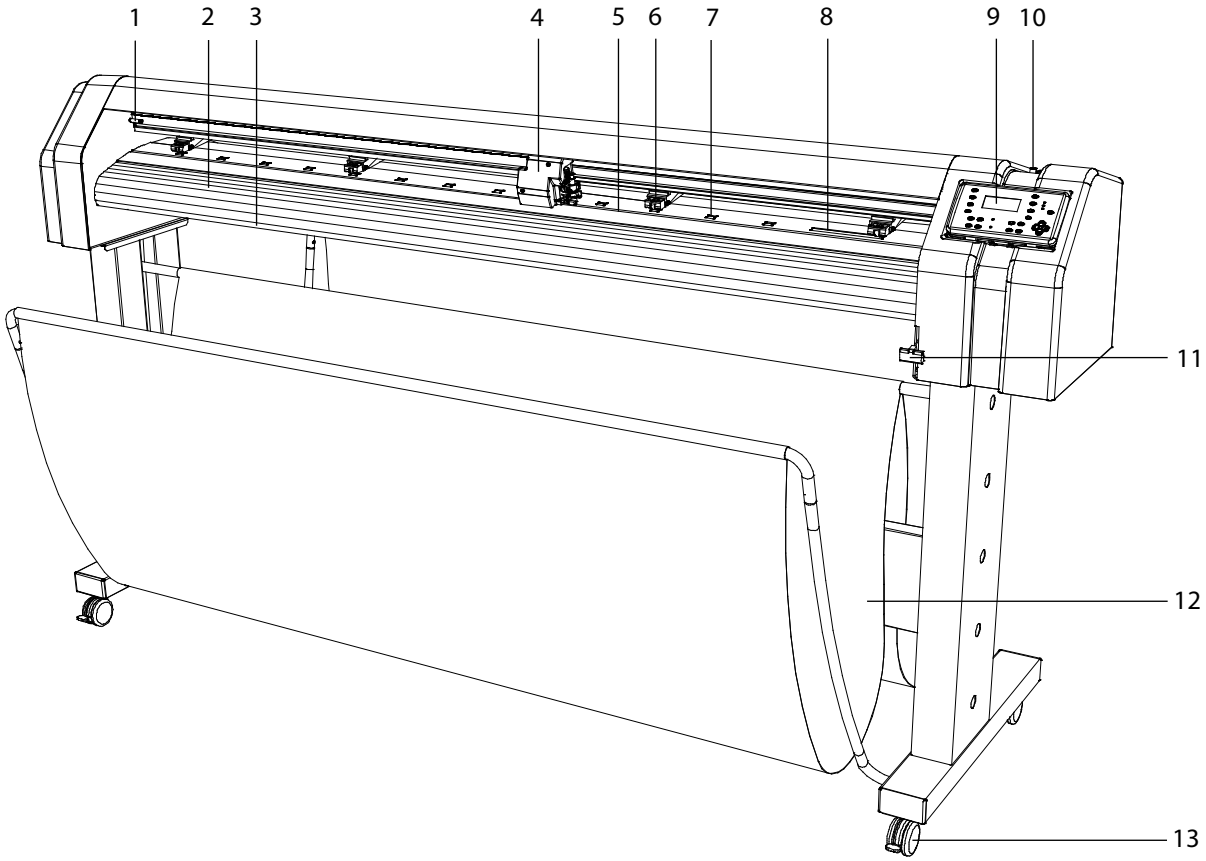
c = at least 1 meter

d = at least 0,1 meter

- This means that you need the following room space in total: **3,20m x 2,66m (W x D)**

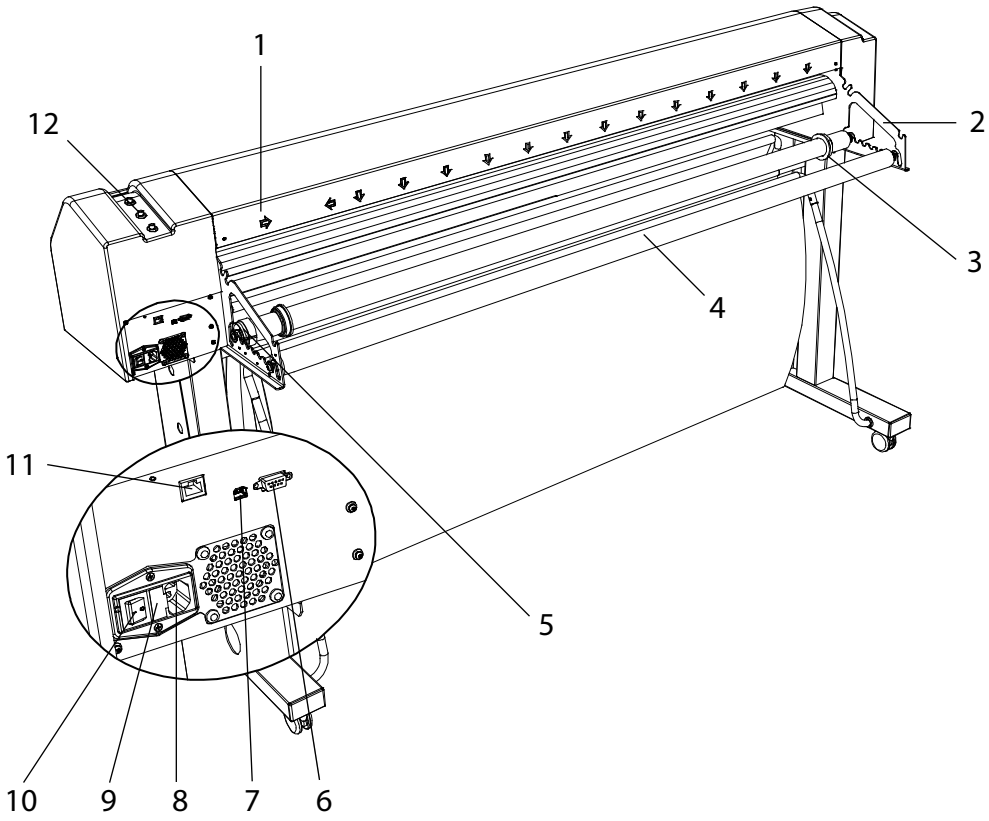
2.3 PART NAMES AND FUNCTIONS

2.3.1 *Front of the SC-PRO*



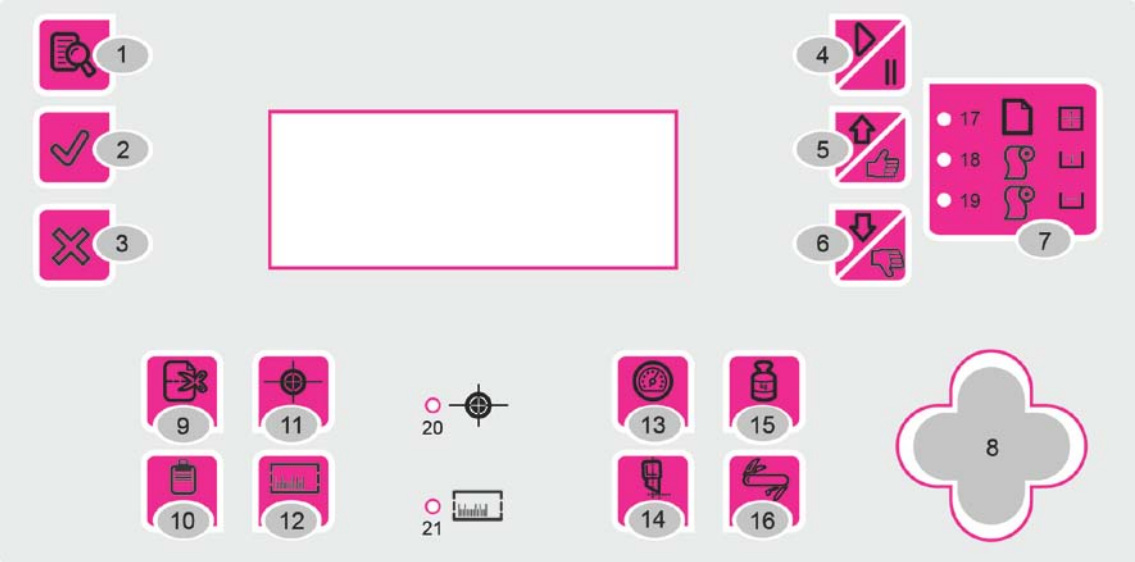
N°	Part	Function
1	Bumper	To avoid the head crashing against the side and to measure the width of the machine during initialization.
2	Media guide	To guide the media when moving front and backwards.
3	Cutting groove	A groove to guide a knife to sheet of the media manually.
4	Cutting head	Assembly of cutting knife, sheet-off knife and EPOS sensor.
5	Cutting mat	Provides a reliable cutting surface and minimizes damage to the knife tip.
6	Pressure rollers	To hold the media against the grid rollers.
7	Small grid rollers	Rollers with a lot of grip to move the media along front and backwards There is 1 large one and 13 small ones.
8	Large grid roller	
9	Control panel	Removable panel with LCD display and control keys.
10	Tool storage holes	Holes in the right cover to store 3 tools.
11	Pressure roller lever	To lower or raise the pressure rollers. Note that all sent data will be removed out of the buffers when raising the lever.
12	Media collection bag	Bag to collect the media when sheeted-off.
13	Caster wheels	To move the cutter easily or to fix the stand using the brakes.

2.3.2 Rear of the SC-PRO



N°	Part	Function
1	Grid roller marks	To mark the position of the grid rollers. The pressure rollers should always be positioned on top of a grid roller, if not, it will be impossible to start cutting.
2	Conveyor roll support brackets	To support the conveyor rolls. Multiple stands possible for the conveyor rolls.
3	Conveyor roll guiding flanges	To keep the loaded roll media in its position.
4	Conveyor roll	To support and roll off the load media roll.
5	Conveyer roll brake	To prevent that the loaded media keeps unwinding.
6	Serial interface connector	To connect the serial interface cable.
7	USB interface connector	To connect the USB cable.
8	Power cable connector	To connect the power cable.
9	Fuse cover	To easily access the two fuses.
10	Power switch	To power ON/OFF the cutter.
11	Network interface connector	To connect the network cable.
12	Tool storage place	To store the pens and knifes.

2.3.3 Operation panel



BASIC KEYS		
1	MENU key	To enter the main menu of the cutter
2	ENTER key	To open a menu item or to confirm a setting
3	EXIT/CANCEL key	To exit a menu item, to decline a setting or to cancel a cutting job.
4	RESUME / PAUSE key	To interrupt or resume a cutting job
5	UP / YES key	This key has multiple functions o Browse through the main menu o Increase a value o Confirm a setting
6	DOWN / NO key	This key has multiple functions o Browse through the main menu o Decrease a value o Decline a setting
7	MEDIA TYPE key	To select the media type o Sheet media initialization: front – rear – left – right o Roll front media initialization: front – left – right o Roll media initialization: left - right
8	ARROW key	To move the media forwards and backwards To move the cutter head to the left or right
DIRECT KEYS		
9	SHEET OFF key	To enter the sheet off mode
10	TEST key	To enter the test menu
11	ORIGIN key	To enter the origin menu
12	CONTOUR CUTTING key	To enter the contour cutting menu
13	SPEED key	To enter the speed menu
14	OFFSET key	To enter the offset menu
15	FORCE key	To enter the force menu
16	TOOL key	To enter the tool menu
LED's		
17	SHEET LED	Lights up when selecting SHEET with the [MEDIA TYPE]-key.
18	ROLL FRONT LED	Lights up when selecting ROLL FRONT with the [MEDIA TYPE]-key.
19	ROLL LED	Lights up when selecting ROLL with the [MEDIA TYPE]-key.
20	ORIGIN LED	Lights up when an origin is set by the user. Blinks when you are busy setting the origin.
21	CONTOUR CUTTING LED	Light up while contour cutting. Blinks when the cutter is measuring the reference box.

2.4 IN-THE-BOX CONTENTS

After unpacking each box, inspect if there are no damaged parts and that all necessary parts are present.

⚠ NOTES ⚠

- THE CONTENTS OF THE PACKAGES MAY BE DIFFERENT DEPENDING ON THE MARKET WHERE THEY ARE USED. CONTACT YOUR LOCAL MUTOH DEALER OR DISTRIBUTOR FOR DETAILS.
- IF ANY PART IS MISSING OR BROKEN, CONTACT EITHER OF THE FOLLOWING:
  - THE SHOP WHERE YOU BOUGHT YOUR MUTOH CUTTER
  - YOUR LOCAL MUTOH DISTRIBUTOR.

	Description	Qty
☐	**Cutter unit**	1
☐	**Stand assembly**	1
☐	**Media bag assembly**	1
☐	**Conveyor system**	1
	Commercial kit	1
	Tools	1
☐	Knife holder and blade	1
☐	Cutter blade 45°	1
☐	Blade for auto sheet-off	1
☐	Pressurized BallPoint Pen	1
☐	Spare cutting mat	1
☐	Mutoh knife	1
☐	Core support 3"	2
☐	Set of wing screws	1
	Cables	1
☐	Power cable EU	1
☐	Power cable UK	1
☐	Power cable US	1
☐	USB cable	1
☐	Adapter cable (9 – 25 pin)	1
☐	Interface (RS-232) cable	1
	Documentation	1
☐	User's Guide	1
☐	Application Guide	1
☐	Installation Guide	1
☐	Installation Sheet	1
☐	Installation CD	1
☐	CD with manuals of all Mutoh machines	1
☐	In-The-Box WEEE regularisation	1
☐	*Starter software kit* ***(*)***	1
☐	*Quality test sheet of this machine*	1

(*) When ordered as a bundle together with a Mutoh Printer, the in-the-box software may be replaced with one software which handles cutting, printing and contour cutting.

3 BASICS

3.1 INSTALLING AND REPLACING TOOLS

3.1.1 Installing tools

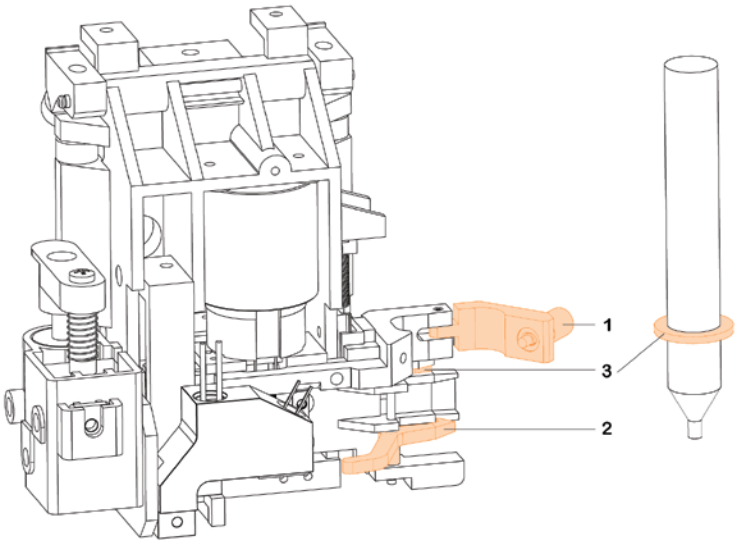
At the right-hand side of the cutter head, you will find a pivoting mounting bracket. Opening this bracket will enable you to install a full range of cutting and drawing tools.

To do so, please follow the instructions mentioned below.

Step 1 : Open the screw (1) to unlock the tool head-mounting bracket.

Step 2 : Hold back the clip (2) of the tool head and slide the tool into position, making sure the tool collar fits into the groove just beneath the locking screw (3).

Step 3 : Fasten the screw to secure the tool into position.

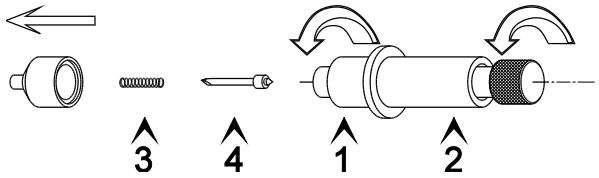


3.1.2 Replace cutter blade

To replace a blade, please proceed as follows:

STANDARD KNIFE HOLDER

Step 1 : Hold the body (2) into one hand and unscrew the base part (1)



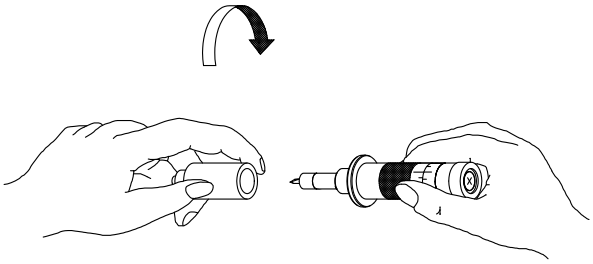
Step 2 : Remove the spring (3) and the cutting blade (4).

Step 3 : Slide the spring over the new cutting blade

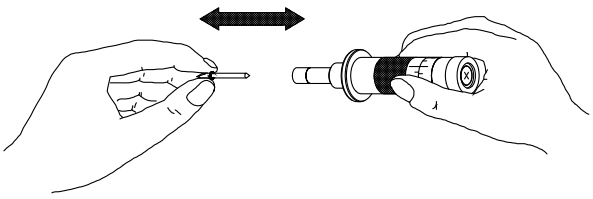
Step 4 : Place the new blade with its spring into the base part and screw the whole assembly onto the body.

KNIFE HOLDER WITH NONIUS

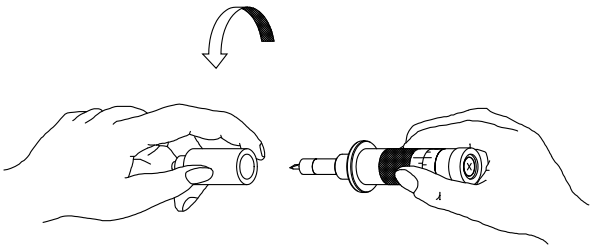
Step 1 : Take the body into one hand and remove the base part



Step 2 : Pull the old blade out of the holder and insert a new one



Step 3 : Place the base part on top of the holder assembly and twist it tightly.



3.1.3 Replace auto sheet-off knife

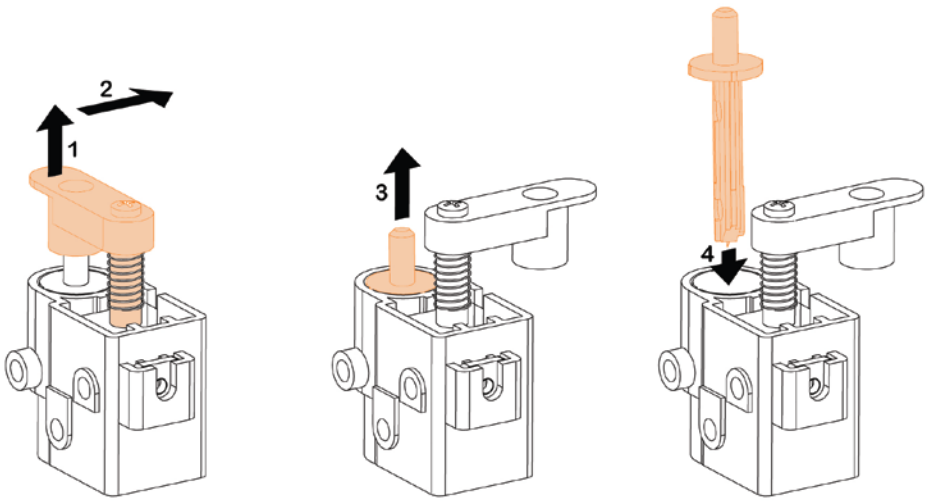
When you frequently use the auto-sheet-off utility, it is a good practice to regularly clean the knife and to replace it when it starts to wear.

To replace the auto sheet-off knife, please follow the instructions mentioned below.

Step 1 : Power OFF the unit and remove the power cable.

Step 2 : Remove the 2 screws fixing the head cover.

Step 3 : Higher the cutter cap (**1**) and swing it away (**2**). Do not loosen the spring.



Step 4 : Remove the sheet-off knife (**3**).

Step 5 : Clean the sheet-off knife, removing any material residues that might be clogged to the blade. In case the blade is worn, reinstall a new knife.

Step 6 : Place the (new) knife into the auto sheet-off assembly (**4**). Make sure the knife is correctly oriented.

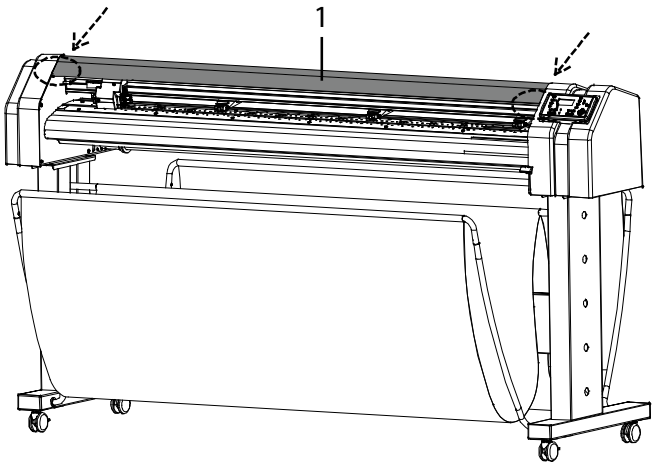
Step 7 : Reinstall the cutter cap onto the auto sheet-off knife.

Step 8 : Reinstall the head cover.

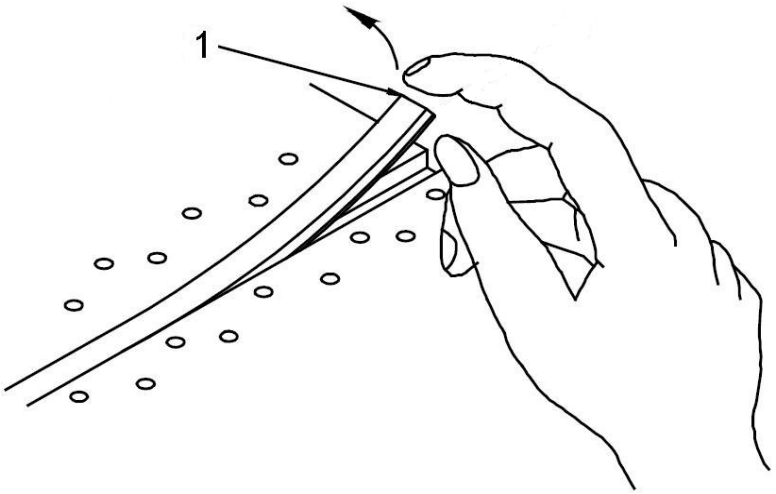
3.1.4 Replacing the cutting mat

To replace the cutting mat, proceed as follows:

Step 1 : To easy the replacement procedure, it is recommended to remove the **Y-rail cover (1)** by loosening the 4 screws. Experienced users might do this without removing the cover.



Step 2 : Remove the worn **cutting mat (1)** by pulling it out (or use a flat screwdriver)



Step 3 : Gently scrape out the remaining glue with a flat screwdriver. Do NOT damage the cutting groove by pulling scratches in it.

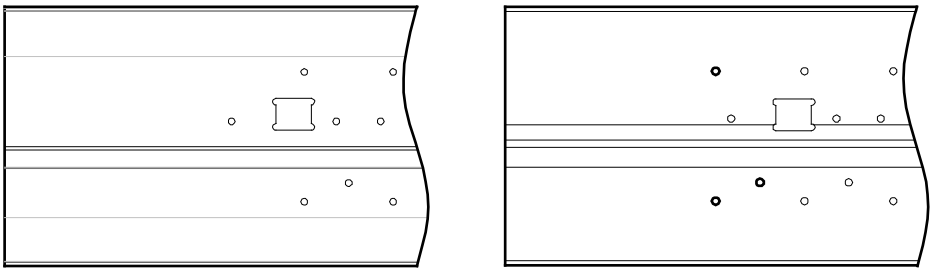
Step 4 : Clean the cutting groove with isopropanol.

Step 5 : Apply Loctite 406 in the middle and sides of the cutting groove.

Step 6 : Remove the backing of the new cutting mat and install it in the cutting groove.

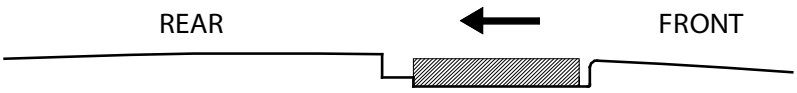
a. Depending on the type of grid roll cover, the cutting mat should be installed differently. You can recognize the type of cover by the amount of holes at the left side (refer to picture below).

TYPE 1 TYPE 2



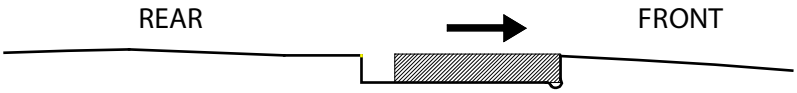
i. *For TYPE 1*

Stick the cutting mat as close as possible to the rear of the machine.



ii. *For TYPE 2*

Stick the vinyl as close as possible to the front of the machine.



Step 7 : Reinstall the Y-rail cover

Step 8 : If you notice some cutting errors after replacing the cutting mat, it might be necessary to contact an Authorized Mutoh technician to perform a Y-Z profile measurement and sheeting-off knife adjustment.

3.2 HANDLING AND STORING MEDIA

Before you will be able to cut a job, it is necessary to know which media to use.

3.2.1 *Handling media*

When you handle media, please pay attention to the following:

- Use recommended media in an appropriate environment. Following are the appropriate temperature and humidity ranges for printing.

	Temperature	Humidity
Recommended working environment	20-30°C	40% to 65%
Rate of change	Within 2°C per hour	Within 5% per hour

- Do not use creased, damaged, torn, curled, or wrapped media.
- Temperature changes will influence the size of media that is used. Before using sheet media, place the sheet in the working environment to have it match to the temperature of the working area.
- Printing before the media has been able to accommodate to the printing environment may cause media jams due to slippage or creases. This also adversely affects the quality of printing.
- Media has a printable side and a non-printable side. If you print on a not printable side, blurring or slight touching may occur.
- Do not touch the printable side of media. Moisture or oil from hands affects the printing quality.
- Do not leave the printer for a long time with media loaded. The media may curl, resulting in misalignment, media jams, or decreased printing quality. In particular, avoid this in winter, dry seasons, or during final printing.
- Do not throw away the box or wrapping bag for storing media.

3.2.2 *Precaution on storing media*

When storing media, pay attention to the following:

- Do not store media in high temperatures, high humidity, or direct sunlight.
- Store sheet media in the original bag after unpacking.
- Unused roll media must be removed from the scroller, rewound tightly, and stored in the original wrapping bag and the box.
- Do not wet media.

3.3 LOADING MEDIA

3.3.1 Loading roll media

Please follow the procedure below to load roll media properly.

Be aware that there is a loading cycle difference between loading cut vinyl and pre-printed vinyl meant for contour cutting.

3.3.1.1 Loading cut vinyl

Configuration to start from:

- Raised pressure rollers.
- Rear media collection bag open and EMPTY.
- Front media collection bag open when the cutting job is smaller than 4m.
  Front media collection bag closed when the cutting job is larger than 4 m.
- Install the brake and two flanges on the conveyor roll closest to the cutter.

Step 1 : Place the vinyl on the conveyor rolls (2 & 4).

Pay attention to the following:

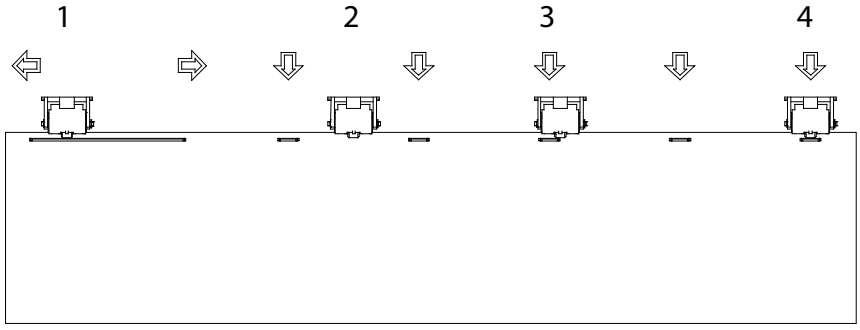
- Position the conveyor rolls so that the space (6) between them is maximum the core diameter (5). Otherwise the core will fall through when the roll is (almost) empty.
- Be sure that the slip ring obstructer (1) is positioned at the left side of the rear conveyor roll (2). It is recommended to install the rear conveyor roll in the following position ► ► ►

Step 2 : Position the media roll on the two conveyor rolls.

Pay attention to the following:

- The outer left and the outer right pressure rollers always have to be used. The middle rollers **2** and **3** (half of the pressure as roller **1** and **4**) can be used, but they may also be disabled (in between two arrows (as number **2** on the picture below). This to eliminate roller marks on vulnerable vinyl for example. The left pressure roller can only move between the two flat arrows.
- On the rear cover, arrows are marked. These arrows represent the possible position of the pressure rollers. The left pressure roller can have a various position; the other three have a fixed position.
- The cutter will cut between the centres of the outer pressure rollers, regardless of the width of the cut vinyl. Therefore, it is recommended to position the outer pressure rollers about 1cm inside the media. It is not recommended that the rollers run on the very edge of the material.

REAR of the machine

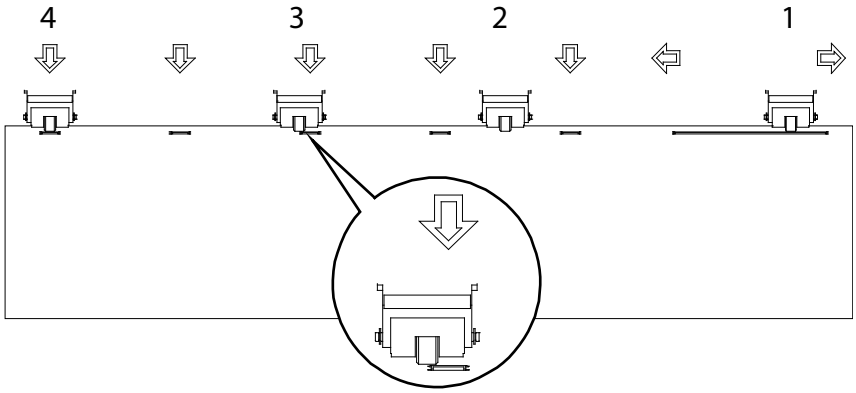


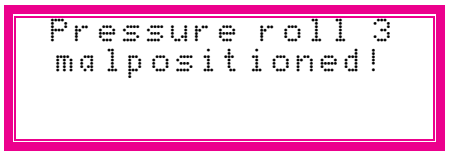
Step 3 : Guide the media under the pressure rollers to the front of the cutter.

Step 4 : Position the pressure rollers as you have decided in **step 2**. Pressure rollers **2-3-4** have a tactile and audible click system which makes it easier to position them correctly. The right pressure roller (**1**) can never be malpositioned.

If one of the others is malpositioned, a message will be displayed after media initialization. Please refer to the picture.

FRONT of the machine



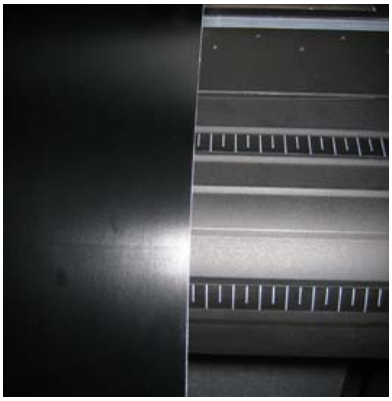


Step 5 : Set the media load type prior to loading media. Select if you want the cutting plotter to look for the front edge of the vinyl.

- ROLL front — The cutter will measure the *left*, *right* and *front* of the media. The *origin* will be defined from the front of the roll. There will be a shuffle of the set Pre-Feed length.

- ROLL — The cutter will measure the *left* and *right* side of the media. The *origin* will be defined from the position of the roll when lowering the lever. There will be a shuffle of the set Pre-Feed length.

Step 6 : Load the media properly:



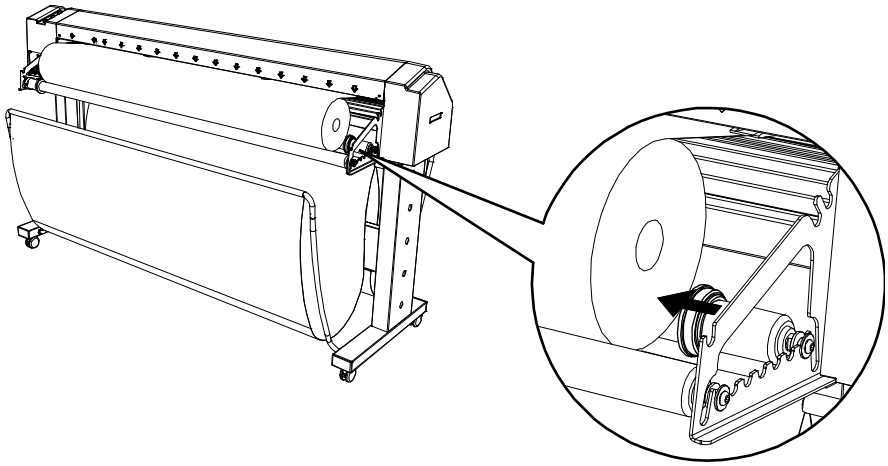
It is best that you hold the front edge of the media in the middle with one hand and with the other hand the roll itself.

As you are holding the roll firmly into position, pull the front edge of the media forward so that there is an even tension across the whole width of the roll (= **equal tension method**)

Do NOT use the rulers to align a roll of media! They are for use with sheets only. Rolls can only be correctly installed using the **equal tension method**.

The rulers will help you monitoring if the media is not meandering too much.

Step 7 : Push the guiding flanges against the left and right side of roll to be sure it does not drift.



Step 8 : Be sure that the media is cut off straight at the front to avoid media initialization mismatches.

⚠ Notes ⚠

Before lowering the pressure rollers, be sure that there is a knife or pen installed in the head. This because during the media initialization, the penhead will also be initialized. If you insert a pen/knife afterwards, the machine will not know how to wind the coil of the penhead. This could result in cutting lines across the complete print.

Step 9 : Pull the lever down. This action will initialize the media loading sequence, during which the cutter will shuffle a pre-set distance of vinyl (Pre-Feed Length). The following messages can be displayed:

⚠ Notes ⚠

- The head will move fast over the media. Be careful not to pinch your fingers during this action.
- Please refer to "chapter 4 - Pre-feed Length" to understand the important function of this feature.

Step 10 : After a successful measurement, the main screen will appear. The width of the media will be displayed:

Step 11 : The SC-Pro is ready to receive data from the host computer.

3.3.1.2 Loading pre-printed vinyl

Configuration to start from:

- Raised pressure rollers.
- Rear media collection bag open and EMPTY.
- Front media collection bag open when the cutting job is smaller than 4m.
  Front media collection bag closed when the cutting job is larger than 4 m.
- Install the brake and two 3" cones on the conveyor roll closest to the cutter.

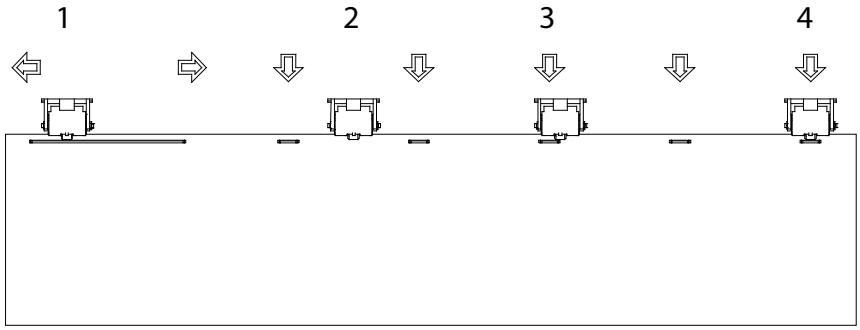
Step 1 : Install the vinyl between the two 3" cones but do not fix the cones already.

Step 2 : Position the pre-printed vinyl on the conveyor roll.

Pay attention to the following:

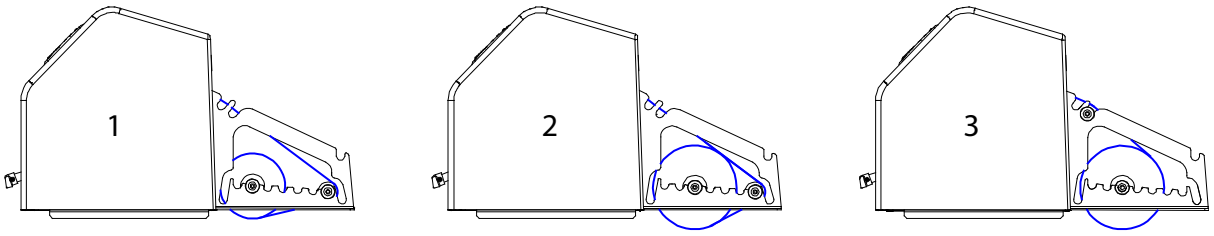
- The outer left and the outer right pressure rollers always have to be used. The middle rollers **2** and **3** (half of the pressure as roller **1** and **4**) can be used, but they may also be disabled (in between two arrows (as number **2** on the picture below). This to eliminate roller marks on vulnerable vinyl for example. The left pressure roller can only move between the two flat arrows.
- On the rear cover, arrows are marked. These arrows represent the possible position of the pressure rollers. The left pressure roller can have a various position; the other three have a fixed position.
- The cutter will cut between the centres of the outer pressure rollers, regardless of the width of the cut vinyl. Therefore, it is recommended to position the outer pressure rollers about 1cm inside the media. It is not recommended that the rollers run on the very edge of the material.

REAR of the machine



Step 3 : Lock the 3" cones with one screw each.

Step 4 : Guide the media under the pressure rollers to the front of the cutter on one of the two following possibilities:

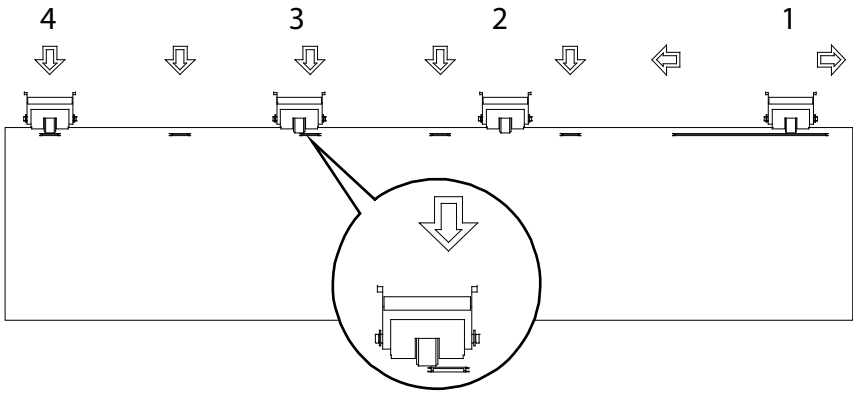


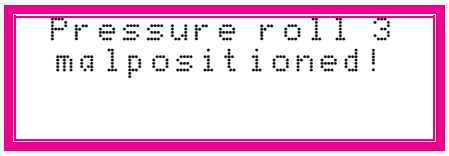
It is recommended to load the media as shown on picture 1. If the vinyl touches the core as on picture 2, load the media as on picture 3.

Step 5 : Position the pressure rollers as you have decided in **step 2**. Pressure rollers **2-3-4** have a tactile and audible click system which makes it easier to position them correctly. The right pressure roller (**1**) can never be malpositioned.

If one of the others is malpositioned, a message will be displayed after media initialization. Please refer to the picture.

FRONT of the machine





Step 6 : Set the media load type prior to loading media. Select if you want the cutting plotter to look for the front edge of the vinyl.

- ROLL front — The cutter will measure the *left*, *right* and *front* of the media. The *origin* will be defined from the front of the roll. There will be a shuffle of the set Pre-Feed length.

- ROLL — The cutter will measure the *left* and *right* side of the media. The *origin* will be defined from the position of the roll when lowering the lever. There will be a shuffle of the set Pre-Feed length.

Step 7 : Load the media properly:

It is best that you hold the front edge of the media in the middle with one hand and with the other hand the roll itself.

As you are holding the roll firmly into position, pull the front edge of the media forward so that there is an even tension across the whole width of the roll (= **equal tension method**)

Do NOT use the rulers to align a roll of media! They are for use with sheets only. Rolls can only be correctly installed using the **equal tension method**.

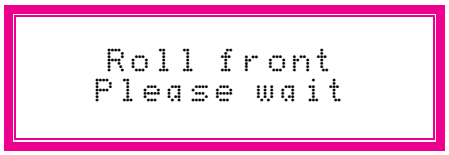
The rulers will help you monitoring if the media is not meandering too much.

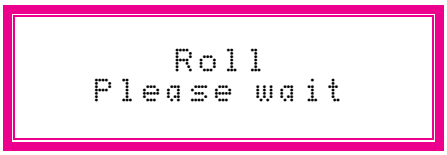
Step 8 : Be sure that the media is cut off straight at the front to avoid media initialization mismatches.

⚠ Notes ⚠

Before lowering the pressure rollers, be sure that there is a knife or pen installed in the head. This because during the media initialization, the penhead will also be initialized. If you insert a pen/knife afterwards, the machine will not know how to wind the coil of the penhead. This could result in cutting lines across the complete print.

Step 9 : Pull the lever down. This action will initialize the media loading sequence, during which the cutter will shuffle a pre-set distance of vinyl (Pre-Feed Length). The following messages can be displayed:

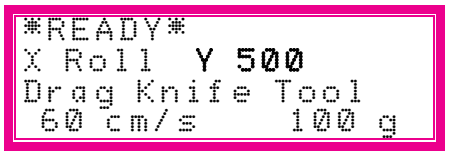




⚠ Notes ⚠

- The head will move fast over the media. Be careful not to pinch your fingers during this action.
- Please refer to "chapter 4 - Pre-feed Length" to understand the important function of this feature.

Step 10 : After a successful measurement, the main screen will appear. The width of the media will be displayed:



Step 11 : The SC-Pro is ready to receive data from the host computer or Mutoh CutServer.

3.3.2 Loading sheet media

Configuration to start from:

- Raised pressure rollers.
- Remove conveyor rolls.
- Rear media collection bag open and EMPTY.
- Front media collection bag open when the cutting job is smaller than 4m.
  Front media collection bag closed when the cutting job is larger than 4m.

Step 1 : Guide the media under the pressure rollers at the front of the cutter.

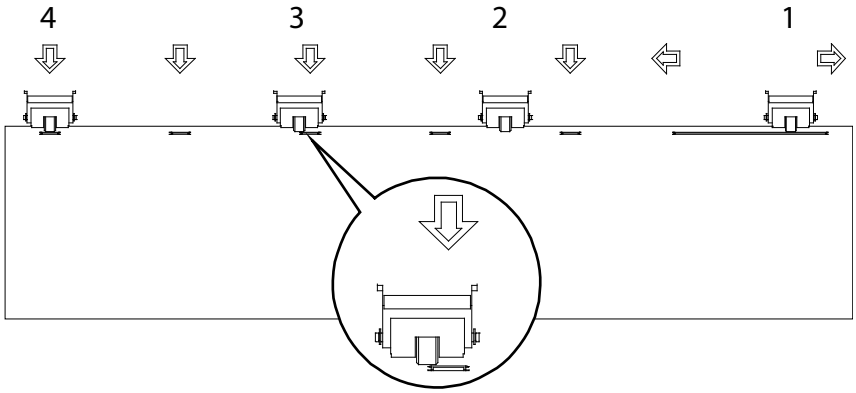
Step 2 : Position the sheet paying attention to the following:

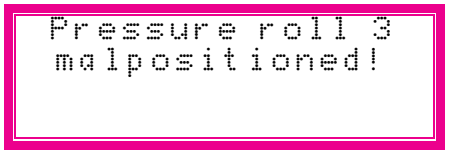
- The outer left and the outer right pressure rollers always have to be used. The middle rollers **2** and **3** (half of the pressure as roller **1** and **4**) can be used, but they may also be disabled (in between two arrows (as number **2** on the picture below). This to eliminate roller marks on vulnerable vinyl for example. The left pressure roller can only move between the two flat arrows.
- The cutter will cut between the centres of the outer pressure rollers, regardless of the width of the cut vinyl. Therefore, it is recommended to position the outer pressure rollers about 1cm inside the media. It is not recommended that the rollers run on the very edge of the material.

Step 3 : Position the pressure rollers as you have decided in **step 2**. Pressure rollers **2-3-4** have a tactile and audible click system which makes it easier to position them correctly. The right pressure roller (**1**) can never be malpositioned.

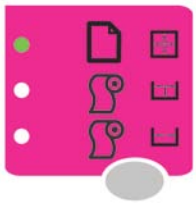
If one of the others is malpositioned, a message will be displayed after media initialization. Please refer to the picture.

FRONT of the machine





Step 4 : Set the media type to sheet:

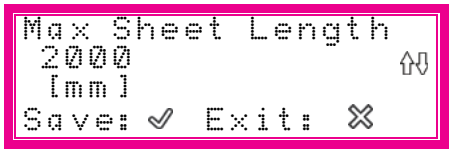


Step 5 : Make sure that about half of the sheet hangs in front of the machine and half hangs at the back. This will make it easier to align the media correctly.

Step 6 : Load the media straight. To help you, two rulers are attached to the front platen.

Step 7 : Be sure that the media is cut off straight at the front to avoid media initialization mismatches.

Step 8 : Be sure that the set maximum sheet length is smaller than the actual length of the loaded sheet. If not, the cutter will automatically swap from sheet to roll front mode.



⚠ Notes ⚠

Before lowering the pressure rollers, be sure that there is a knife or pen installed in the head. This because during the media initialization, the penhead will also be initialized. If you insert a pen/knife afterwards, the machine will not know how to wind the coil of the penhead. This could result in cutting lines across the complete print.

Step 9 : Lower the lever.

⚠ Notes ⚠

the head will move fast over the media. Be careful not to pinch your fingers during this action.

Step 10 : The cutter will measure the paper. The following message will be displayed:

⚠ Notes ⚠

Please refer to "chapter 4 - Pre-feed Length" to understand the important function of this feature.

Step 11 : When no problems occur, the main screen will appear. The measured width of the media will be displayed:

X = Media length in mm
Y = Media width in mm

Step 12 : You are ready to cut.

4 WALKTHROUGH THE OPERATION PANEL

The operation panel has been build up out of different keys as described in Chapter 2: "Product Overview - Operation Panel".

- **Direct access keys**

  With these keys, it is possible to enter the frequently used menu items directly without the necessity to go via the main menu.

- **Basic keys**

  With these keys, you can enter the main menu, move media and cutter head…

- **Special key combinations**

  With these combinations of keys, some features can be activated or de-activated.

Please find in the next coming chapters all information about these keys, menus, features…

This chapter is based on firmware version SP1.2.0 and keyboard version KB1.0.0

4.1 DIRECT KEY ACCESS

The following functions are directly accessible on the keyboard via the direct keys.

Note that these keys are only accessible when the display is in its start screen.

	SHEET-OFF KEY	To perform a sheet-off of the loaded media.
	ORIGIN SET KEY	To set the origin.
	TEST KEY	To calibrate, align and test the EPOS system.
	COUNTOUR CUTTING KEY	To set and start contour cutting.
	SPEED KEY	To set the cutting speed (in cm/s).
	FORCE KEY	To set the cutting force (in grams).
	OFFSET KEY	To set the offset of the knife.
	TOOL KEY	To select a tool.

4.1.1 SHEET OFF key

When a job has been finished and the media has to be sheeted off, this function can be used.

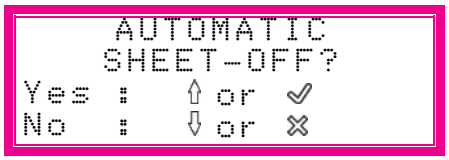
⚠ Notes ⚠

Please refer also to the "sheet off mode" and "sheet off margin" menu.

Step 1 : Feed the media using the keys to the desired position.

Step 2 : Press the [SHEET OFF] key.

Step 3 : Press the [⇧] key to start to sheet-off sequence or the [⇩] key to cancel.



Step 4 : When selecting YES, the cutter will perform one of the following actions, depending on the sheet-off settings.

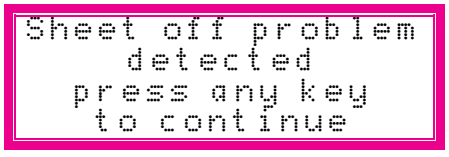
a. When Sheet off mode is set to automatic, the media will be sheeted off near to the pressure rollers.

b. When Sheet off mode is set to manual, the media will be fed toward the cutting groove. The following message will be displayed:

c. When Sheet off mode is set to disable, the media cannot be sheeted off. The following message will be displayed:

Step 5 : The main screen will automatically be displayed when the sheeting off sequence has been finished correctly.

Step 6 : If the media has not been sheet-off (completely), the following message will be displayed:



4.1.2 ORIGIN key

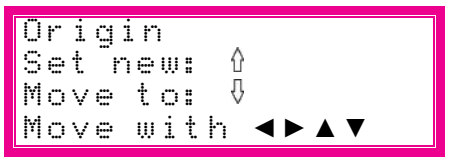
Please follow the instructions below to change / control the origin.

⚠ Notes ⚠

Please make sure media is loaded. If not, the SC-Pro positioning calculation is based on previously installed media.

Step 1 : Press the [ORIGIN] key.

Step 2 : The EPOS laser will be activated automatically. The display will show following message:



Step 3 : Press the [⇩] key to move to the actual origin and/or use the keys to move the laser to the desired origin position and press the [⇧] key to set the new origin.

Step 4 : The main screen will automatically be displayed again.

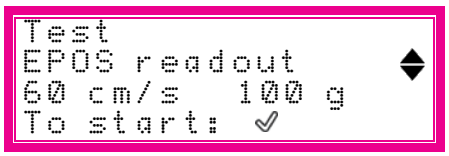
4.1.3 TEST key

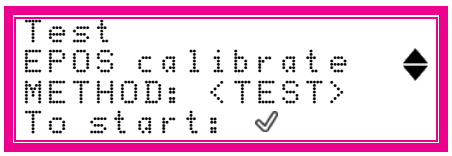
To be able to contour cut, an Epos® feature has been incorporated. This feature will search for the black reference box and measure the position of the design(s). When you see some deviation during contour cutting, it is recommended to perform the test cuts described below.

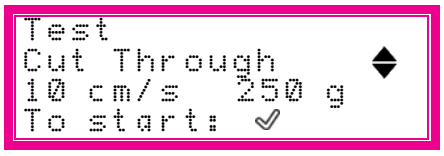
For some applications it is necessary to be able to cut through the media. Various settings such as speed, force, tool up and tool down length can be set ant tested here.

Step 1 : Press the [TEST] key.

Step 2 : Select one of the tests with the ⇧⇩ - keys.







⚠ Notes ⚠

Please refer to *chapter 5* for all details about these tests.

4.1.4 CONTOUR CUTTING key

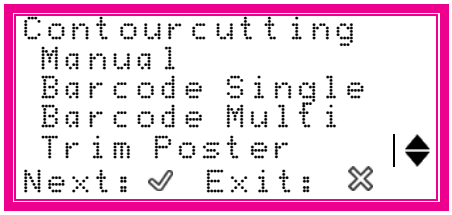
Please follow the instructions below to select an alignment method, to set parameters and to start contour cutting.

FOR MORE INFORMATION ON HOW TO CONTOUR CUT, PLEASE REFER TO:

- **THE APPLICATION GUIDE DESCRIBING ALL DETAILS ABOUT CONTOUR CUTTING.**
- **CHAPTER 6 OF THIS MANUAL**

Step 1 : Press the [CONTOUR CUTTING] key.

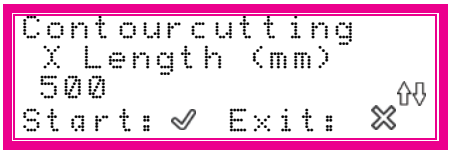
Step 2 : Select the alignment method with the ⇳ - keys and confirm with the ✓- key.

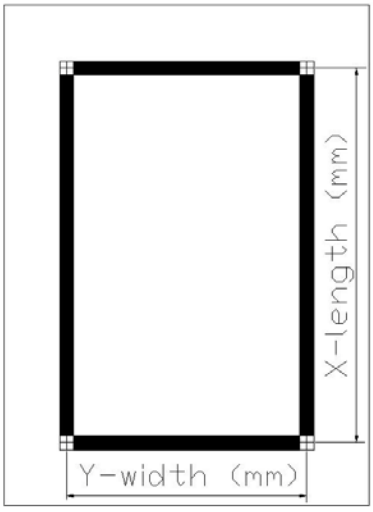


Step 3 : The next screen depends on the previous selection.

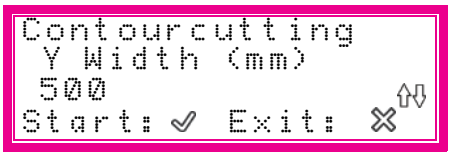
a. When you have selected "Manual", the following can be set.

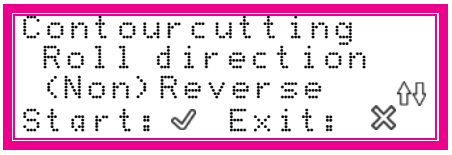
- Set the **X-length**. Use the ⇳ keys to change the value. Press the [✗]-key to go to the previous screen. Press the ✓ key to proceed to the Y width





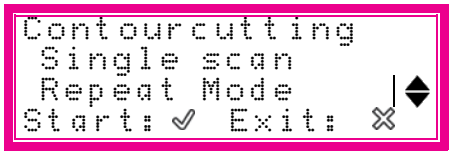
- Adjust the **Y-width** and **roll direction** in the same way.





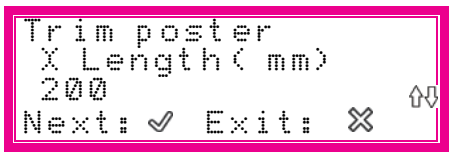
- Press the ✓- key to start the scanning of the reference box.

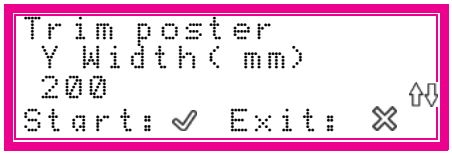
b. When you have selected "Barcode Single" or "Barcode Multi", you have to decide if the job has to be performed only once ("Single Scan") or multiple times ("Repeat Mode").



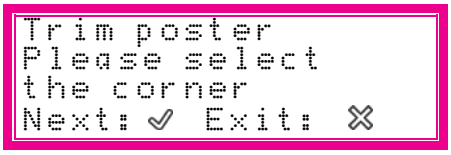
- Press the ✓- key to start the scanning of the reference box.

c. When you have selected "Trim Poster", you have to fill in the X and Y length of the poster you want to trim.

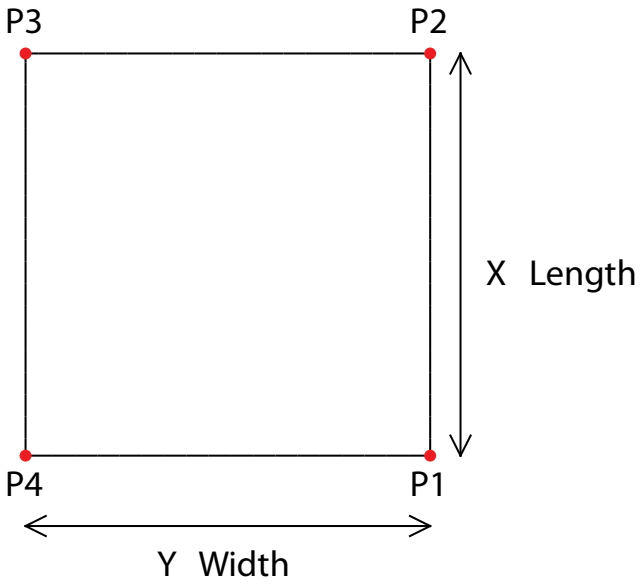




- Press the ✓-key to activate the EPOS LED.
- Select the first corner of the bounding box which you want to trim with the keys

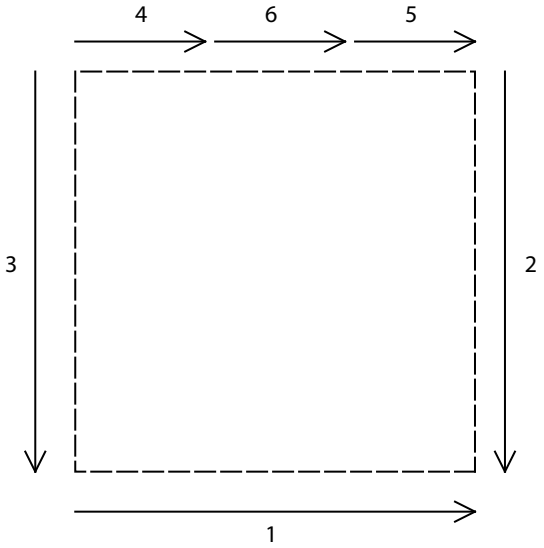


- Press the ✓-key to proceed to the second corner. The media will be fed the previously set length and width.



- Do this until you have selected all 4 corners in correct order (P1 – P2 – P3 – P4)
- The cutter will PAUSE until you have inserted the "through cut tool".

- Press the [PLAY] key to trim the poster according to the routine shown below



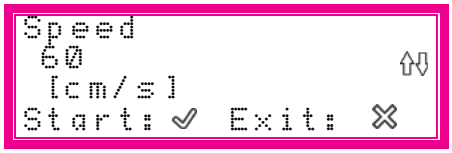
- After trimming the poster, you will be asked to reinstall the default cutting tool

4.1.5 SPEED key

Please follow the instructions below to change / control the cutting speed.

Step 1 : Press the [SPEED] key.

Step 2 : The current speed (in cm/s) will be displayed. Change the value with the ⇳ - keys.



Step 3 : Press the [✓] key to change the current value or the [✗] key to abort.

⚠ Notes ⚠

The speed can be viewed / changed in following modes:

- READY mode
- BUSY mode
- PAUSE mode

⚠ Notes ⚠

The cutting speed, tool up or laser speed are independent and different settings.

4.1.6 FORCE key

Please follow the instructions below to change / control the tool force.

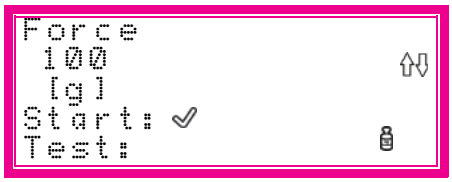
Tool force is the amount of downward pressure that the cutter applies on the knife / pen.

We merely want to point out that you have to try to cut your design with the lowest possible pressure that gives no trouble to weed. Some cast media require only 20 grams to be cut completely through. In that case there is no need to apply 100 grams of pressure. Too much pressure can cause a decrease of quality.

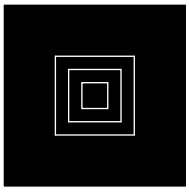
Be sure that the knife depth has been set correctly. Otherwise, this setting is useless.

Step 1 : Press the [FORCE] key.

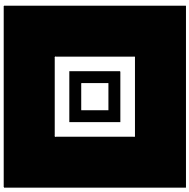
Step 2 : The current force (in gram) will be displayed. Change the value with the ⇧⇩ - keys.



Step 3 : Press the [FORCE] key once again to make a test cut to verify the new force.



Step 4 : Weed out the pattern



Step 5 : Check if the top layer is cut completely and that you can see a slight scratch on the backing.

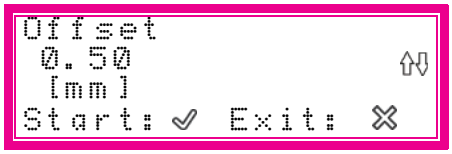
Step 6 : Press the [✓] key to accept the new value.

4.1.7 OFFSET key

Please follow the instructions below to change / control the offset.

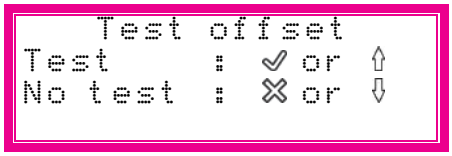
Step 1 : Press the [OFFSET] key.

Step 2 : The current offset (in mm) will be displayed. Change the value with the ⇳ - keys.



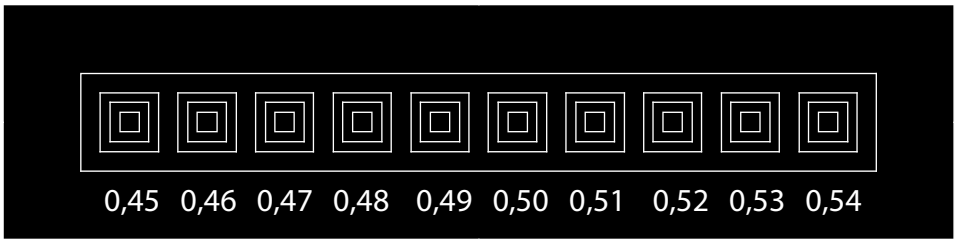
Step 3 : Press the [✓] key to change/test the current value or the [✗] key to abort.

Step 4 : The following message will be displayed when you have changed the value:



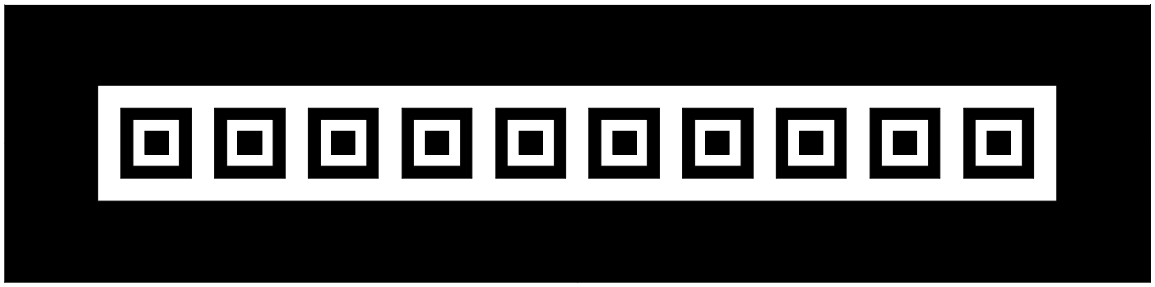
Step 5 : The following pattern will be cut:

Each square will be cut with a different offset.



Step 6 : Use the keys to forward the media.

Step 7 : Weed out the boxes ~~as~~ and check the patterns and determine which of them gives best quality. Especially look for good quality of the corners and easy weeding.



Step 8 : Select one of the offsets with the left-right arrow keys. The EPOS laser will point to the selected offset / test pattern.

Step 9 : Press the [✓] key to accept the new offset.

4.1.8 TOOL key

Please follow the instructions below to change the tool.

Step 1 : Press the [TOOL] key.

Step 2 : The current selected tool will be displayed. Switch between **knife** or **pen** with the ⇳ - keys.

Step 3 : Press the [✓] key to change the current value or the [✗] key to abort.

4.2 MENU OVERVIEW

Before to be able to browse through the menu, be sure that the cutter is in normal conditions.

▼

▼

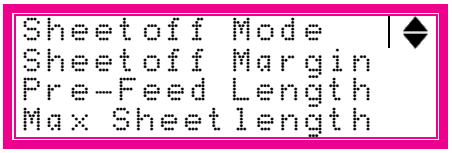
Press the [MENU]-key to open the menu.

▼

▼

Use the - keys to browse through all the different menus.

▼



▼

Press the [✓] key to open the requested menu

▼

▼

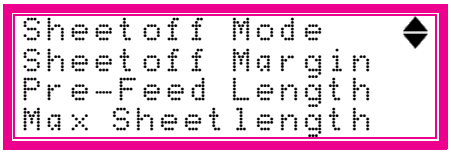
▼

▼

Press the [✗] key to go back to the menu overview

▼

▼



▼

Press the [✗] key to go back to the main menu

▼

▼

PLEASE FIND BELOW A COMPLETE OVERVIEW OF THE EXISTING MENUS. THE DEFAULT VALUES ARE MARKED IN BOLD.

Note that it is possible to view the full or basic menu. The items shown in the basic menu are marked in grey.

Sheetoff Mode	**AUTOMATIC**
	DISABLE
	MANUAL

Sheetoff Margin	1 – **5** – 250 [mm]

Auto Shuffle	**Enabled**
	Disabled

PRE-FEED LENGTH	0 – **1000** - 10000 [mm]

Max Sheetlength	0 – **2000** - 10000 [mm]

Page Mode	0
	1
	2

Origin	**L RIGHT**
	CENTER
	U RIGHT
	U LEFT
	L LEFT

Laser Speed	2 – **15** – 100 [cm/s]

TOOL-UP SPEED	2 -**100** [cm/s]

JOB FOCUS	Speed
	Accuracy

Smoothing	**Enabled**
	Disabled

Factory default	**No**
	Yes

Copies	0 – **1** – 100

LANGUAGE	**ENGLISH**
	ESPANOL
	DEUTSCH
	FRANCAIS
	NEDERLANDS
	ITALIANO
	POLSKI

Emulation	**HPGL2**
	MHGL
	MHGL2
	HPGL

Program Step	**0,010mm**
	0,025mm

VS / ZF / AS	**ACCEPT**
	IGNORE

ToolSwap Detect	**OFF**
	AUTODETECT

LCD contrast	0 – **16** – 32

Keyboard beep	**No**
	Yes

VERSIONS	Application	► SP x.x.x
	X port	► XP x.x.x
	FPGA	► FPGA x.x.x
	Keyboard	► KB x.x.x

Serial comm.	BaudRate	1200
		2400
		4800
		9600
		19200
		28800
		38400
		57600
		115200
	Databits	7
		8
	Parity	**NONE**
		EVEN
		ODD
	StopBits	0
		1
		2
	FlowControl	**Software**
		Hardware
	RS232/USB/ETH	**Auto**
		USB
		RS232
		ETHERNET

Network comm.	TCP/IP Address	192.168.001.199
	Subnet mask	255.255.255.0

BASIC/FULL MENU	**FULL**
	BASIC

4.2.1 Sheet off mode

The auto-sheet-off mechanism of your cutter can be very easily used to cut the front edge of a new roll of vinyl straight as well as to cut off a sheet of vinyl from a roll, to be used as a separate sheet.

With the sheet-off mode, you can select "AUTOMATIC", "MANUAL" or "DISABLE".

Sheetoff Mode	**AUTOMATIC**	A sheet-off will be done automatically when pressing the sheet-off key.	
	MANUAL	A sheet-off can be done with a snap-off blade knife; the media will feed towards the cut groove after a job is done.	
	DISABLE	No sheet-off possible.	

4.2.2 Sheet off margin

It is sometimes useful that the media is fed an amount of millimetres after a job, before sheeting off.

Sheetoff Margin	1 – **5** – 250 [mm]	The media will be fed 5 mm extra before sheeting off.

4.2.3 Auto Shuffle

Set if it is necessary to perform an automatic media shuffle after a sheet-off procedure.

Auto Shuffle	**ENABLED**	An automatic shuffle will be executed after a sheet-off
	Disabled	No automatic shuffle will be executed after a sheet-off

4.2.4 Pre-Feed length

This parameter is directly related to the loading of ROLL FRONT / ROLL media. The Pre-Feed length or SHUFFLE length has to be set before a roll is loaded.

There are three reasons for using a Pre-Feed Length:

1. The length of media set for the Pre-Feed length parameter will be pulled off the roll, before the cutting job starts. This will prevent media from being pulled off the roll at high speed and acceleration. High speed can only be properly used on condition that the media can move freely, without having to be pulled off the roll during a job.

2. Before actually cutting starts the complete length of the media is shuffled back and forth through the cutter, ensuring that the pressure rollers have a discrete path while the user has the time to verify if the vinyl transport goes well.

3. Your SC-Pro cutter has been equipped with MUTOH's unique AUTO-SHEET-OFF feature, to automatically cut off media at the end of a cutting sequence. Following an automatic PAGE command or a manual PAGE command initiated via the control panel, the cutter will shuffle through the pre-set Pre-Feed length of media, to ensure that there is enough media left for a possible replot. If there is not enough media left, the cutter will stop before the end of the assigned media length and switches to SHEET mode. The cutter will not initiate the media again in between two contour cutting jobs.

Pre-Feed Length	0 – **1000** - 10000 [mm]	The media will be fed 1 meter before the cutting job will start.

⚠ Notes ⚠

- Please note that the use of the PRE-FEED LENGTH should not be regarded as a loss of time. If the shuffle movement is executed without difficulty, the user can be convinced that the sign to be cut will be executed with very little risk of media tracking problems. As such, it will result in a time-saving operation, preventing that the user will have to re-cut a very complex design because of bad media alignment.

⚠ Notes ⚠

- Please note that the cutting range is not limited by the Pre-Feed Length which you have set. In case a design, which exceeds the shuffle length, is sent to the cutting plotter, the cutter will react as follows:
  - The first vector, which exceeds the limit, will be cut using reduced speed for the distance exceeding the limit.
  - The cutter will continue at the requested speed until the new limit is exceeded.
  - However, this should not be a reason for you not to change the pre-feed length at all, as by omitting to change it; you will be inhibited to check the full vinyl transport before the job is launched
  - When there is an end of roll detection during the pre-feed, the cutter will automatically switch to SHEET mode.

4.2.5 Max Sheet length

After installation of a sheet and sheet being selected in the menu, the cutting plotter will measure the width and length of the sheet.

To avoid unrolling a full roll of media when a roll is loaded while the media type is set to sheet, you can define a maximum allowed sheet length.

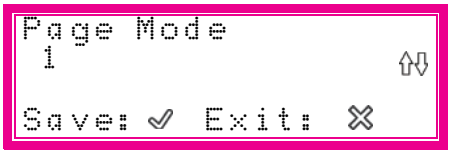
In case sheet is selected in the menu, the SC-Pro will not measure more than the length in the Max. Sheet Length menu, preventing the roll media to be rolled off completely.

Max Sheet length	0 – **2000** - 10000 [mm]	The maximum sheet length / maximum feeding will be 2 m.

⚠ Notes ⚠

- When there is NO end of roll detection during the sheet measurement, the cutter will automatically switch to ROLL mode.

4.2.6 Page mode



The page mode determines the cutter's reaction to a PAGE command sent by the cutting software. The PAGE command is a command, which is used to relocate the origin after a job is finished and which can take control remotely of the cutter's automatic sheet-off feature. Sheeting-off automatically, without user intervention, is a feature which is unique to Mutoh cutting-plotters and which enhances the cutter's versatility and overall performance enormously.

A page-command looks like this: "PG;" or "PGN;" with "n" a number in millimetres.

If the PAGE command "PG;" is sent, the cutter will automatically sheet of regardless of the Page mode, minimizing the loss of vinyl.

If the PAGE command "PGN;" is sent, the number mentioned after the PG command will be interpreted differently, depending on the page mode you have chosen:

Page Mode 0 :

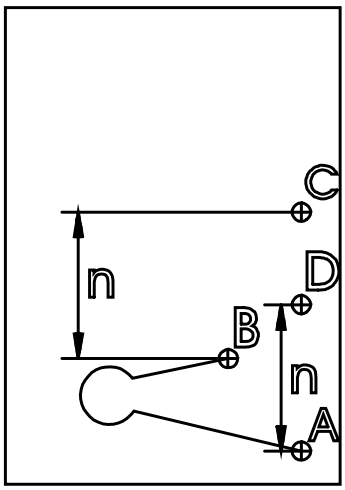
The number after the page command is ignored. The media will be cut 5 mm (0.2") after the latest down-vector. The new cutting limit will be located 0.5 (0.2") from the lower media border.

Page Mode 1 :

The new origin is located "n" millimetres beyond the last down-vector that was sent.

Page Mode 2 :

The new origin is located "n" millimetres beyond the previous origin position.



"PGN" is sent (n is a number in mm).

A : Original origin

B : End point last vector

C : New origin with Page Mode 1

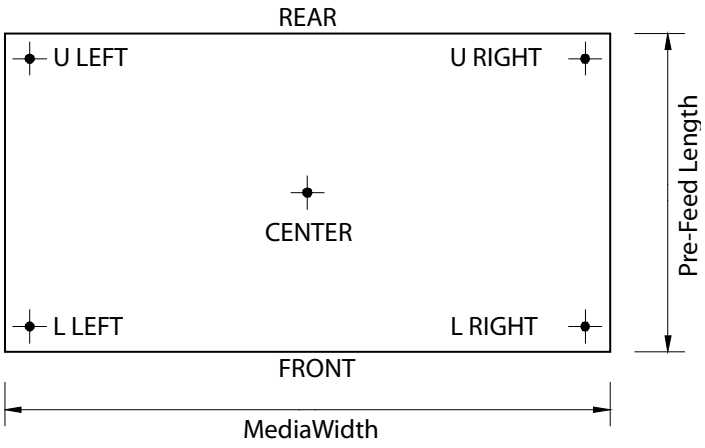
D : New origin with Page Mode 2

4.2.7 Origin

Change / control the default origin after a media load sequence.

⚠ Notes ⚠

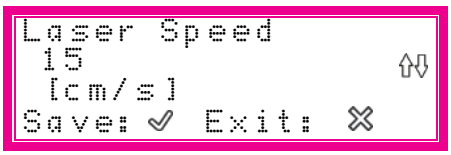
Please make sure media is loaded. If this is not the case, the SC-Pro positioning calculation is based on previously installed media.



Origin	**L RIGHT**	The origin will be set in the lower right corner.
	CENTER	The origin will be set in the centre.
	U RIGHT	The origin will be set in the upper right corner.
	U LEFT	The origin will be set in the upper left corner.
	L LEFT	The origin will be set in the lower left corner.

4.2.8 Laser speed

It is possible to perform a test contour cutting with the SC-Pro cutting plotter. Contour lines will be indicated by the EPOS laser beam. In case the speed of the test contour cutting is not acceptable, you can decrease or increase the speed.



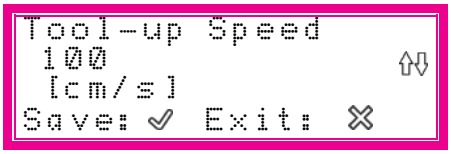
Laser Speed	2 – **15** – 100 [cm/s]	Laser speed can be set between 2 and 100 cm / s

⚠ Notes ⚠

The laser speed has nothing to do with the speed of measuring a frame.

4.2.9 Tool-up speed

Tool-up movements are mostly long movements (which reach their maximum speed) between the short tool-down movements. These movements could cause abrupt media transport (which could cause tracking problems). Therefore, it is recommended to select a tool-up speed lower than the speed selection in the menu.



Tool-up Speed	2 -**100** [cm/s]	Tool-up speed can be set between 2 and 100 cm / s

4.2.10 Job focus

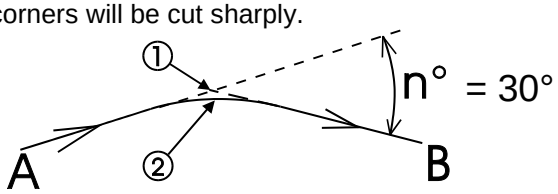
A lot of advanced cutting settings will be made in the background without any need of intervention by the end-user. Select by means of the table below the correct job settings (focus)

Job Focus	**Accuracy**	Give in some speed, gain quality.
	Speed	Give in some quality, gain speed.

4.2.11 Smoothing

Smoothing can be ENABLED or DISABLED. Depending on your choice, cutting of obtuse angles will be dealt differently by the cutter.

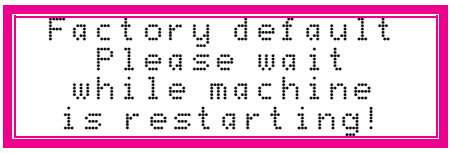
If the complementary angle between two consecutive vectors A & B is larger than the smoothing angle, the cutter will slow down and cut a sharp corner (1). If the angle is smaller, the cutter will maintain its speed and cut a rounded corner (2). The optimum smoothing angle is calculated internally.
When smoothing is DISABLED all corners will be cut sharply.



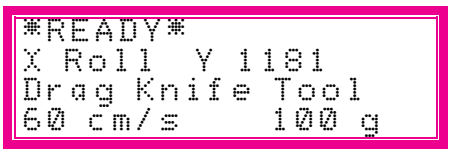
Smoothing	**ENABLED**	Smoothing has been enabled (recommended)
	DISABLED	Smoothing has been disabled

4.2.12 Factory default

Restore the factory defaults as follows



Wait until the main screen appears to perform further actions



4.2.13 Copies

In case multiple outputs of a specific design are needed, you can use the copies function. This function will replot the last set of data, which was sent to the cutting plotter. That is, all data that was sent since the last INITIALISATION command ("IN").

Copies	0 – **1** -100	Set number of copies between 0 and 100

⚠ Notes ⚠

- When you want to make copies, make sure that the 'Sheet Off' mode is enabled. Otherwise you'll perform a multi-cut. The cutter will cut continuously on the same place.
- In case of identical frames without barcode, copying contour cutting tasks can be done via the COPY menu option as well as from roll and sheet.
- When you perform a lever up action during a job, all data will be cleared out of the buffers, which means, no copies can be made anymore of the job.

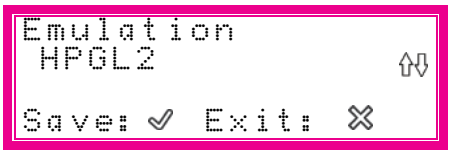
4.2.14 Language

Select in the language of the user interface.

Language	**ENGLISH**
	ESPANOL
	DEUTSCH
	FRANCAIS
	NEDERLANDS
	ITALIANO
	POLSKI

4.2.15 Emulation

Your cutter is able to understand different graphic languages. It is highly recommended to leave this setting unchanged.



Emulation	**HPGL2**	Default graphic language
	MHGL	For internal use only
	MHGL2	For internal use only
	HPGL	For internal use only

4.2.16 Program step

Please note that some software packages use the "**step per mm"** terminology, in which case a program step of 0.025 mm corresponds with 40 steps per mm and a program step of 0.010 mm with 100 steps per mm.

Contour cutting supports only 0.010 mm program step.

⚠ Notes ⚠

If the plot unit is not set correctly, all your cutting jobs will be cut 2.5 times too large or too small.

Program Step	**0,010mm**	Set the step to 0.010 mm
	0,025mm	Set the step to 0.025 mm

4.2.17 VS/ZF/AS

Several cutting software packages enable the user to send speed, force and acceleration commands to the cutter. The cutter can be set up to ACCEPT or IGNORE these commands.

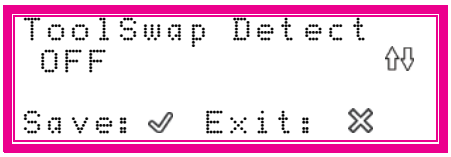
VS / ZF / AS	**ACCEPT**
	IGNORE

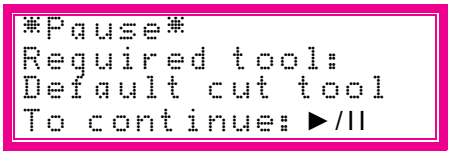
⚠ Notes ⚠

When VS and ZF commands are sent and accepted, they will override the speed, force and acceleration settings the user may have set from the cutter operation panel.
When the VS and ZF commands are ignored, the cutter will always use the settings, which are set-up from the cutter operation panel.

4.2.18 ToolSwap Detect

This function has especially been developed for through cutting applications. You can use the same tool for as well the contourcutting data as the throughcutting data or you can make use of 2 different tools.



ToolSwap Detect	**OFF**	The cutter will not ask you to change tools. The complete job will be cut with the same tool.
	Autodetect	The cutter will ask you to change tools when necessary 

4.2.19 LCD contrast

Change the LCD contrast as you wish.

LCD contrast	0 – **16** – 32	Set LCD contrast between 0 and 32 • 0 = bright • 32 = dark

4.2.20 Keyboard beep

Decide whether the keyboard should beep every time you strike a key or not.

Keyboard beep	**No**	No keyboard beeps will sound
	Yes	A keyboard beep will sound after pushing a key.

4.2.21 Versions

Check which versions are installed on the SC-Pro cutter.

Versions	SP x.x.x	Application firmware version
	XP x.x.x	Ethernet module firmware version
	FPGA x.x.x	On board chip firmware version
	KB x.x.x	Keyboard firmware version

4.2.22 Basic / Full menu

You do not need all menu items every day or time you want to cut. Therefore, it is possible to hide some functions when you select "Basic"-menu. When you select "Full"- menu, all menus will be visible.

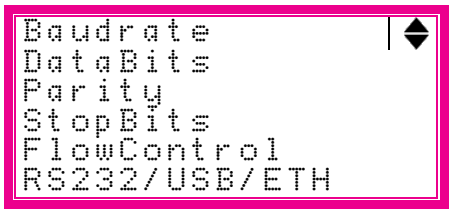
Basic/Full menu	Basic	Only the most frequently used menus will be viewed ▸ Pre-Feed Length ▸ Tool Up Speed ▸ Job Focus ▸ Language ▸ Versions ▸ Basic/Full menu
	Full	All menus will be visible

4.2.23 Serial communication

In order for your plotter to be able to communicate well with your host computer, the communication settings on both machines have to match exactly. Please refer to the manual of your software to determine which communication setting will be used by your software. Your cutter can be set up to use any settings necessary.

To change the communication selection, please follow the instructions mentioned below:

Step 1 : Select with the ⇧⇩ - keys the setting you want to change.



Step 2 : Press the [✓] – key to confirm your selection.

Step 3 : Change the value with the ⇧⇩ - keys and confirm once again with the [✓] – key.

Step 4 : Return to the main menu of the serial communication settings and change all the other settings if necessary.

The following settings can be made.

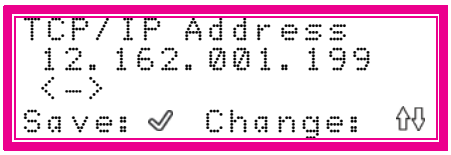
- *Baudrate* 1200, 2400, 4800, ***9600***, 19200, 28800, 38400, 57600 or 115200
- *DataBits* 7 or ***8***
- *Parity* ***None***, even or odd
- *StopBits* 0, ***1*** or 2
- *FlowControl* ***Software*** or hardware
- *RS232/USB/ETH* ***Auto***, Serial, USB or Ethernet connection

4.2.24 Network communication

In order for your plotter to be able to communicate well with your local network, some settings have to be made. Please contact your system administrator for all necessary information.

4.2.24.1 TCP/IP Address

Set the IP address of the cutter.



TCP/IP Address	192.162.001.199	Set the IP address of the cutter. The IP address should be chosen in between the following range: **xxx.yyy.zzz.www** **x:** 1-223 **y:** 0-255 **z:** 0-255 **w:** 0-254

How to change the IP address

Step 1 : Select the number you want to change with the keys.

Step 2 : Change the number with the up down keys.

Step 3 : Press the [✓] key to accept the change.

4.2.24.2 SubnetMask

Set the SubnetMask of the cutter.

SubnetMask	255.255.255.0	Set the SubnetMask of the cutter between 000.000.000.000 - 255.255.255.252

How to change the SubnetMask

Step 1 : Select the number you want to change with the keys.

Step 2 : Change the number with the up down keys.

Step 3 : Press the [✓] key to accept the change.

4.3 SPECIAL KEY COMBINATIONS

Shortcut description	Special Key combination
EPOS Laser ON	
EPOS Laser OFF	
Bar code verification	
Updating the keyboard	
Reset the keyboard	
Activate Sheet off knife	
Factory defaults	

4.3.1 EPOS laser ON

Activate the EPOS laser as follows

Step 1 : Power ON the cutter.

Step 2 : Press the following keys simultaneously:

Step 3 : The EPOS laser will light up.

4.3.2 EPOS laser OFF

Deactivate the EPOS laser as follows

Step 1 : Power ON the cutter.

Step 2 : Press the following keys simultaneously:

Step 3 : The EPOS laser will go out.

4.3.3 Bar code verification

This function makes it possible to check if the scanned barcode corresponds with the real barcode number.

How to verify a barcode:

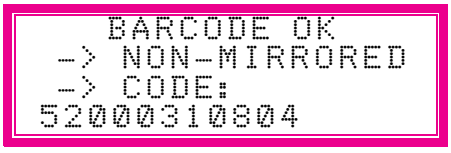
Step 1 : Load a vinyl with a barcode on.

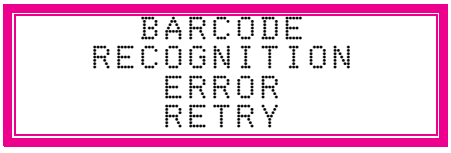
Step 2 : Activate the EPOS laser as described above.

Step 3 : Position the EPOS laser in front (left side) of the barcode using the arrow keys.

Step 4 : Press the special key combination to start the barcode verification scan.

Step 5 : The cutter will scan the barcode. Following messages can appear:





Step 6 : If the barcode number displayed (52000310804) corresponds with the number under the barcode, everything is all right. If not, a print mismatch could be the problem.

4.3.4 Updating the keyboard

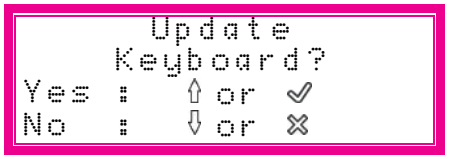
After installation of a new cutter firmware, it is highly recommended to update the keyboard firmware as described below:

Step 1 : Power ON the cutter.

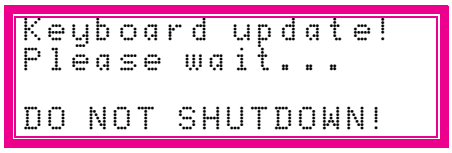
Step 2 : Install the new firmware.

Step 3 : Press the special key combination to start the installation.

Step 4 : Confirm that you want to update the keyboard firmware.



Step 5 : The following message will be displayed:



The installation will take approximately 1 minute.

Step 6 : After installation, a beep will sound and the main screen will be displayed again.

4.3.5 Reset the keyboard

It might be possible that the keyboard does not correspond anymore. To avoid to reboot the cutter; a special key combination is made available to reset the keyboard.

Step 1 : Press the special key combination to start the installation.

Step 2 : The keyboard will reset and the main screen will be displayed again.

Step 3 : If the keyboard does not respond still, you have to reboot the cutter.

4.3.6 Activate Sheet off knife

This function is made to check if the up down knife movement still works. Do NOT try to sheet off your media with this function, this to avoid damaging the media, head and knife.

Step 1 : Power ON the cutter.

Step 2 : Press the following keys simultaneously:

Step 3 : The sheet off knife will come down.

4.3.7 Factory default

Please follow the steps below to restore factory settings.

Step 1 : Power ON the cutter.

Step 2 : Press the following keys simultaneously:

Step 3 : The cutter will restart automatically.

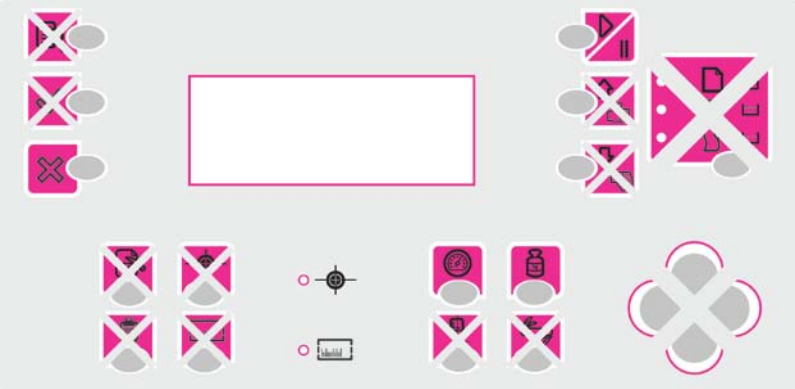
Step 4 : The main screen will be displayed again when the factory defaults have been restored.

4.4 KEYS ACCESSIBLE DURING A CUTTING JOB

During or while pausing a cutting job, a lot of keys are locked.

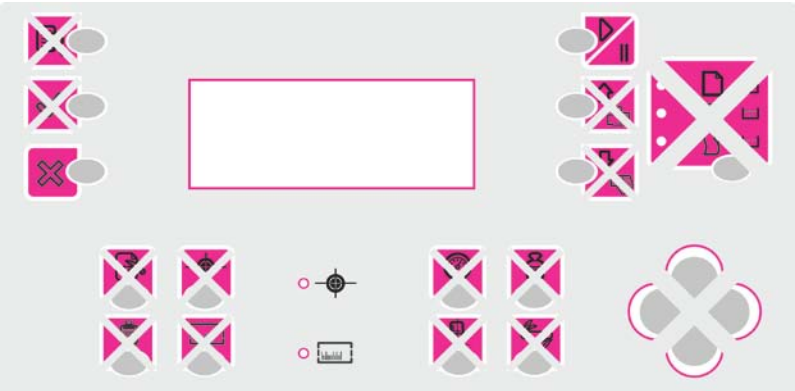
Please find below an overview.

4.4.1 While cutting



Key	Description	Function
	READY/PAUSE key	Pause a cutting job
	EXIT key	Cancel a cutting job
	SPEED key	Adjust the speed settings
	Force key	Adjust the force settings

4.4.2 While pausing a cutting job



Key	Description	Function
	READY/PAUSE key	Resume a cutting job
	EXIT key	Cancel a cutting job

5 FINE-TUNING YOUR CUTTER

In order to help you to obtain perfect quality our engineers have developed a step-by-step method for the beginning user. Once you have more experience with your cutter, you will be able to fine-tune your cutter in a trice.

There are several knife types available, each of them meant for specific cutting media.

	Cutting Blade 1	Cutting Blade 2	Cutting Blade 3
Top Angle	45º (Red cap)	30º (Yellow cap)	60º (Blue cap)
Typical Offset	0.50 mm	0.50 mm	0.50 mm
Default Speed	60 cm/s (20 inch/s)	60 cm/s (20 inch/s)	60 cm/s (20 inch/s)
Default Force ▪ **Contour cutting** ▪ **Through cutting**	 100 g 250 g	 100 g 250 g	 100 g 250 g

There are three factors that have to be taken into account when setting up your cutter to execute a demanding cutting job:

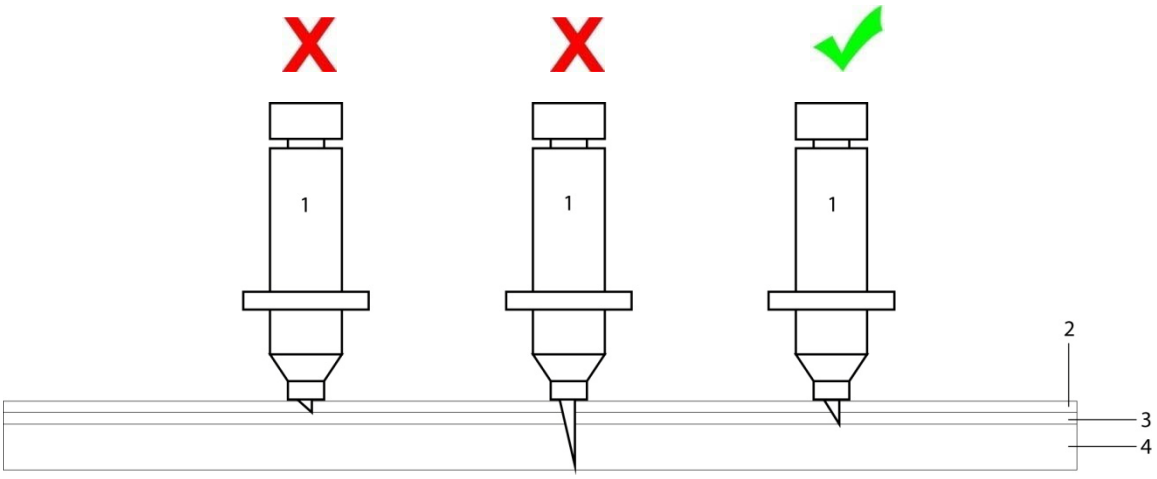
- The knife depth
- The cutting pressure
- The offset

5.1 KNIFE DEPTH

Adjusting the knife depth is a very important parameter when it comes to making high quality outputs. You will have to make a difference between contour cutting depth and cut through depth.

5.1.1 *Contour cut knife depth*

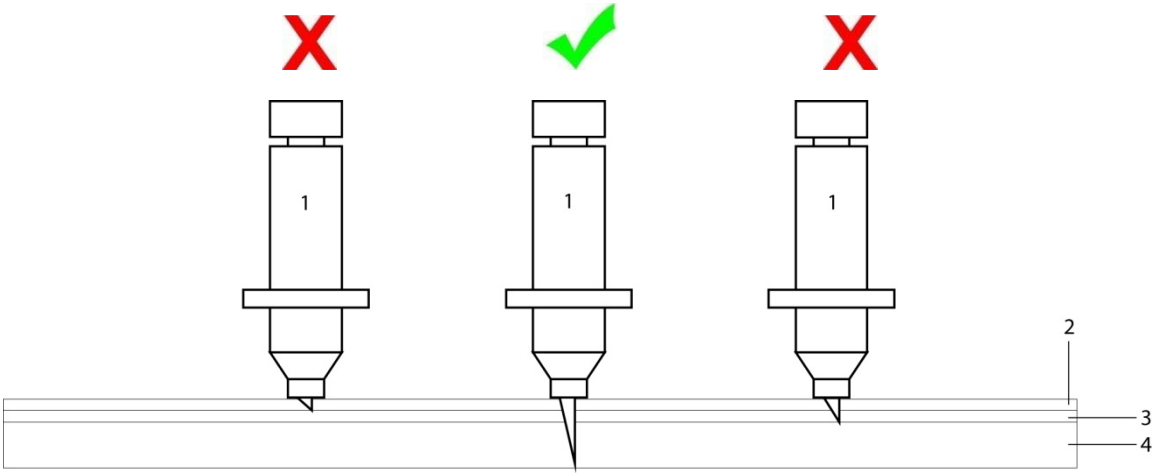
Always make sure that the knife blade protrudes enough out of the knife holder, but not too much. The knife top should just leave a mark on the backing.



N°	Description
1	Knife holder
2	Vinyl
3	Adhesive film
4	Backing

5.1.2 *Cut through depth*

Always make sure that the knife blade protrudes enough out of the knife holder, but not too much. The knife top should come through the backing.

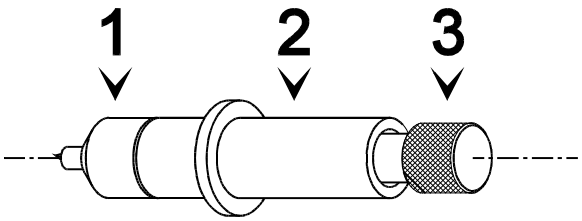


N°	Description
1	Knife holder
2	Vinyl
3	Adhesive film
4	Backing

5.1.3 Adjusting the knife depth

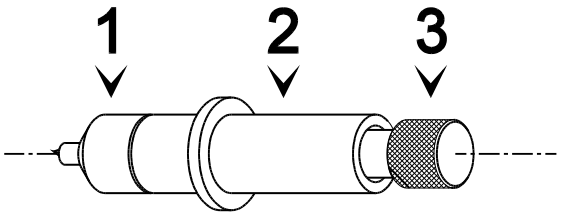
STANDARD KNIFE HOLDER

Hold the body (2) in one hand and adjust the depth by using the set screw (3).



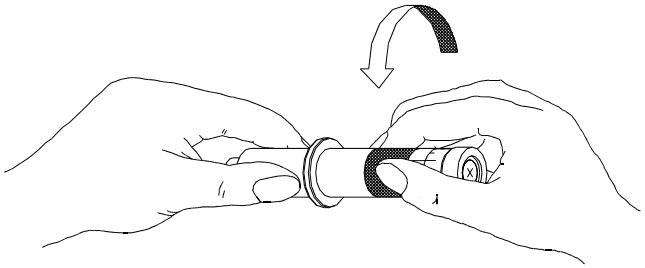
STANDARD KNIFE HOLDER

Turning the set screw (3) clockwise will make the blade protrude out of the edge of the base part (1). Turning the set screw (3) counter clockwise, will retract the blade.
For a first test, turn out the blade until it protrudes about 0.2mm (0.008") out of the base part



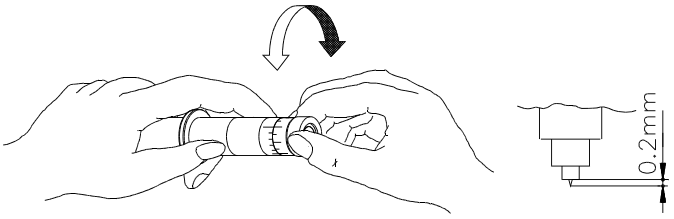
OPTIONAL KNIFE HOLDER WITH NONIUS

Loosen the base part of the cutting knife. To do this, take the base part in your left hand and twist the ring slightly.



OPTIONAL KNIFE HOLDER WITH NONIUS

Take the base part and the ring in your left hand and twist the shaft until the knife point protrudes about 0.2 mm (0.008") out of the edge of the base part.

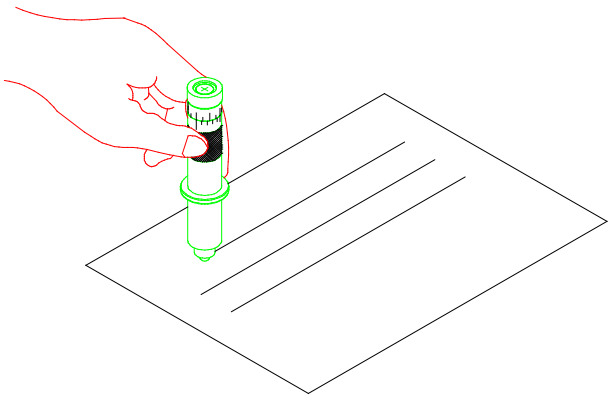


Tighten the ring firmly against the base part. This will prevent the cutting blade from coming loose during cutting.

Make a manual test-cut on a small piece of media, of the same type that you will be using.

For contour cutting: Adjust the depth until the top layer is cut completely and that you can see a slight scratch on the backing when peeling off.
At no times you should be able to see a scratch at the back side of the media.

For cutting through: Adjust the depth until the knife just cuts through the back side of the media
Refer also to chapter 5: Cut through test

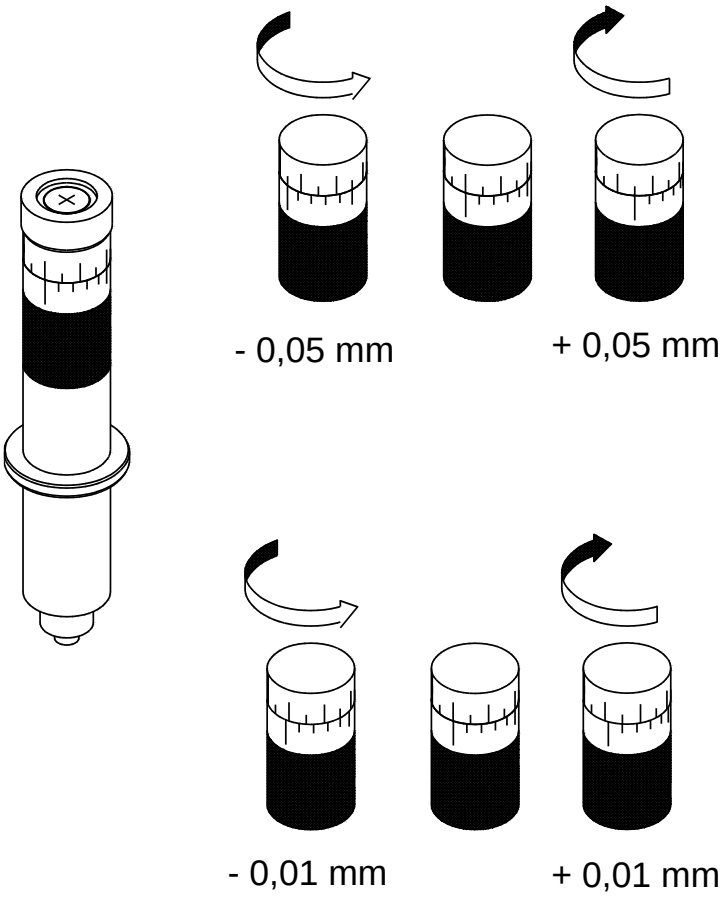


Repeat steps 2 and 3 until the correct depth is obtained.

5.1.4 Features of the optional knife holder

For some applications it might be convenient to be able to very accurately change the depth of the cutting blade. For those applications, MUTOH can provide you with an optional knife holder, featuring a nonius (vernier) with which it is possible to adjust the depth of the knife in increments of 0.01 millimetre (0.0004")
The upper scale lines make it possible to change the knife depth over 0.05 mm (0.002").

The lower scale (nonius) makes it possible to change the knife depth over 0.01 mm (0.0004").



5.2 SETTING THE TOOL FORCE

Tool force (cutting pressure) is the amount of downward pressure that the cutter applies on the knife / pen.

We merely want to point out that you have to try to cut your design with the lowest possible pressure that gives no trouble to weed. Some cast media require only 20 grams to be cut completely through. In that case there is no need to apply 100 grams of pressure. Too much pressure can cause a decrease of quality.

For cutting through applications we recommend 250 grams. The same principle as for contour cutting, the lowest possible pressure is advised, not only for the output quality but also for the lifetime of the cutting mat.

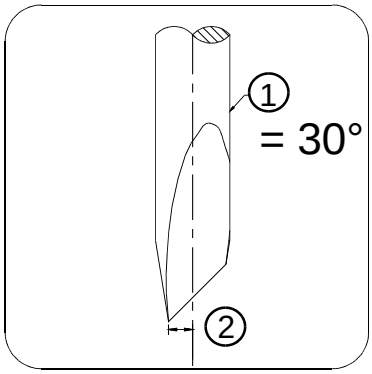
⚠ Notes ⚠

Please refer to the chapter "Direct key access" to know how to change the tool force.

5.3 OFFSET PRINCIPLE

One of the most important factors to obtain good quality, but unfortunately also one of the factors that is easily forgotten, is the offset.

As you can see in the figure below, the knife offset (2) is the distance between the knife centre and the knife tip.

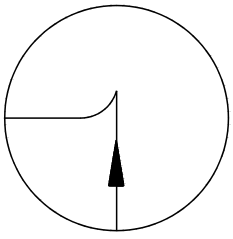


1: Cutter blade
2: Theoretical Offset

Accurate measurement of the OFFSET to be used is very difficult and requires specialized equipment. You should therefore adjust the offset (2) by checking real cutting results on the media you will use. MUTOH helps you doing this by way of a semi-automatic offset adjustment routine, which has been integrated into your cutter.

The selected Offset value is LARGER than the optimum knife offset.

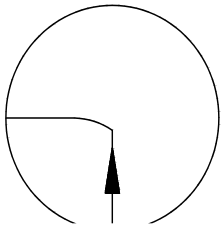
In this case, a square corner will be cut as follows :



The cutting direction is indicated by the arrow. The corners are not well formed. The cutter cuts too far in the angular points.

The selected Offset value is SMALLER than the optimum knife offset.

In this case, a square corner will be cut as follows :



The cutting direction is indicated by the arrow. The corners are not well formed. The cutter did not cut far enough in the angular points.

⚠ Notes ⚠

Please refer to the chapter "Direct key access" to know how to change / test the offset value.

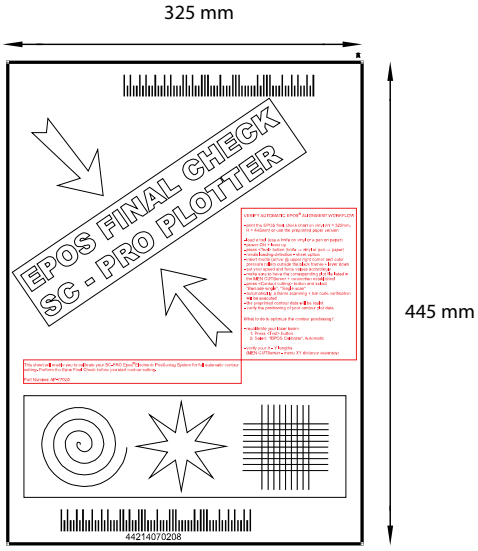
5.4 EPOS TEST CUTS

To be able to contour cut, an Epos® feature has been incorporated. This feature will search for the Reference box and measure the position of the design(s).

When you establish some miscalculations during contour cutting, it is recommended to perform the test cuts described below.

After these test, everything should be all right. If not, please contact an Authorized Mutoh Technician.

5.4.1 EPOS alignment



5.4.1.1 Tools necessary:

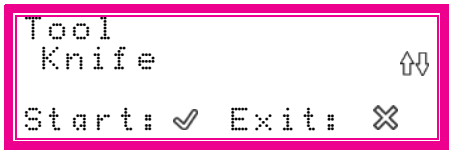
- SC-Pro.
- Host Computer with the Mutoh CutServer installed on.
- EPOS final check chart pre-printed on vinyl or paper.
- Drag knife when testing on vinyl.
- Pressurized ballpoint pen when testing on paper.

5.4.1.2 Alignment procedure

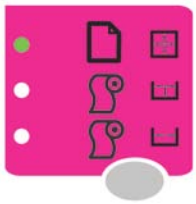
Step 1 : Load the appropriate tool (a knife on vinyl and a pen on paper).

Step 2 : Power ON the cutter and be sure that the lever is raised.

Step 3 : Press the [TOOL] button and set the tool you are using.



Step 4 : Set the media type to "Sheet".



Step 5 : Insert the test sheet as described in the chapter "Loading sheet media" with the arrow in the top right corner and the outer pressure rollers outside the reference box. The middle pressure rollers may be disabled.

Step 6 : Pull the lever down.

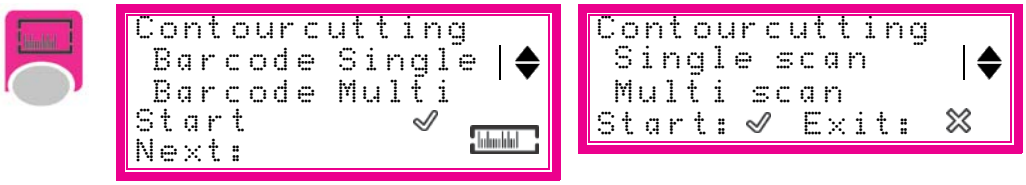
Step 7 : Set your speed and force values accordingly.

Step 8 : Make sure there is a connection between the Mutoh CutServer and the cutter by selecting the checkbox near to the requested cutter.

Step 9 : Launch the job in one of the two possible ways:

a. *Directly from the SC-Pro keyboard*

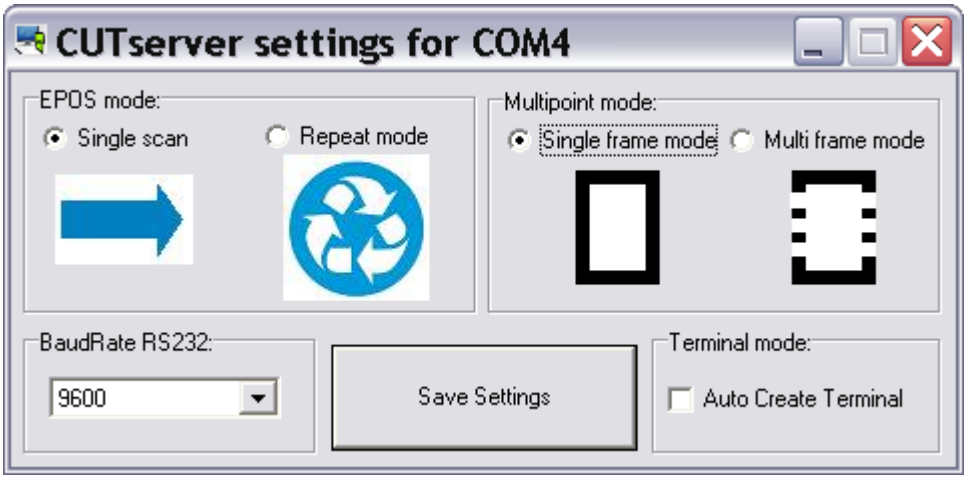
1. Press the contour button key and select BarCode Single – Single Scan.



2. Press the [✓]-key to start the test.

b. Using the Mutoh CutServer

1. Make following settings: Single Scan – Single Frame Mode and Save Settings.



2. Press the [GO] button to start the test.

Step 10 : The reference box will be automatically measured and the barcode verification will be executed. When the plot file is not listed in the Mutoh CutServer, the internal embedded Epos Final Check plot file will be used.

Step 11 : The pre-printed contour data will be replot.

Step 12 : Verify the positioning of you contour plot data.

5.4.1.3 Adjustments if necessary

It might be possible that the contour positioning is not correctly.

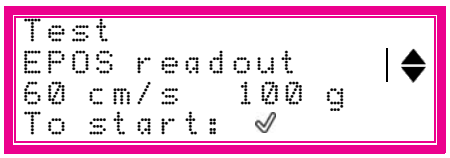
Please perform the following extra tests to optimize it:

1. Recalibrate your laser beam by means of the Epos Calibration test as described in the next chapter.

2. Verify your X-Y lengths via the Mutoh CutServer (SC-Pro Tests menu)

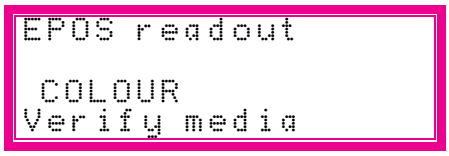
5.4.2 EPOS readout

This function is made to test if the EPOS sensor still recognizes the difference between coloured and white media.



Step 1 : Press the [✓] key to start the test.

Step 2 : The EPOS laser will light up and the following message will be displayed:



Step 3 : Hold a white paper under the EPOS laser and check if the display message changes to WHITE. If not, the sensor is broken or badly positioned. Contact an Authorized Mutoh Technician to replace or calibrate the EPOS sensor.

Step 4 : Press the [✓] key to end the test and to go back to the main screen.

5.4.3 EPOS calibration

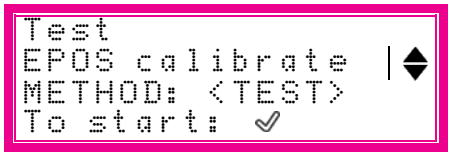
This test will fine-tune the position of the cutting knife compared to the EPOS laser firmware wisely. This test can be done manually and automatically. It is recommended however, to let the SC-Pro adjust the values automatically.

Step 1 : Install and set a knife.

Step 2 : Install a dark (black) vinyl. Check with the EPOS readout function if it is dark enough as described in the previous chapter.

Step 3 : Press the [TEST]-key.

Step 4 : Select "EPOS calibration" with the ⇳ - keys.

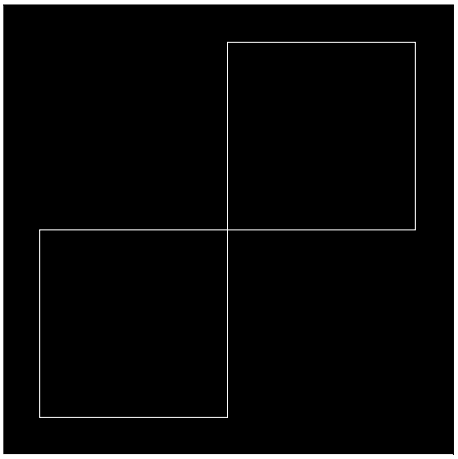


Step 5 : Press the [TEST]-key once again to decide whether to perform the test automatically or manually.

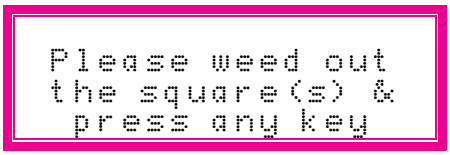
Step 6 : Move the cutter head with the arrow keys to the centre of the media and feed it a bit to be sure you have enough space (10 cm x 10 cm) for the test.

Step 7 : Press the [✓] key to start the calibration.

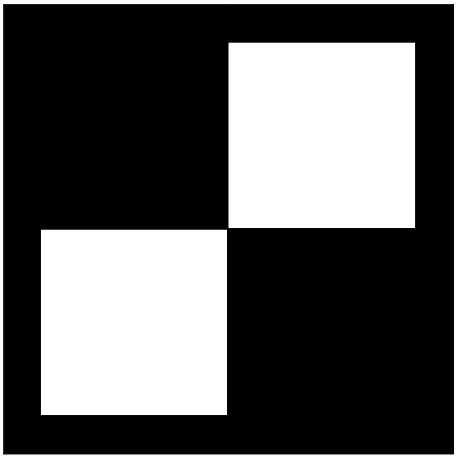
- **MANUAL CALIBRATION**
  - Be sure that you have set an origin.
  - Following pattern will be cut:



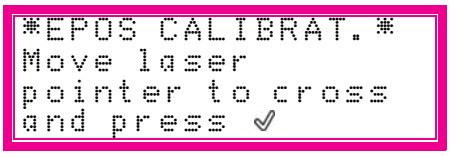
- Press the [✓] key.
- The following message will be displayed:



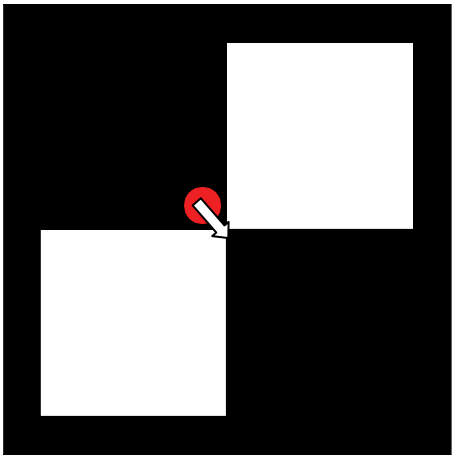
- Weed out the two rectangles.

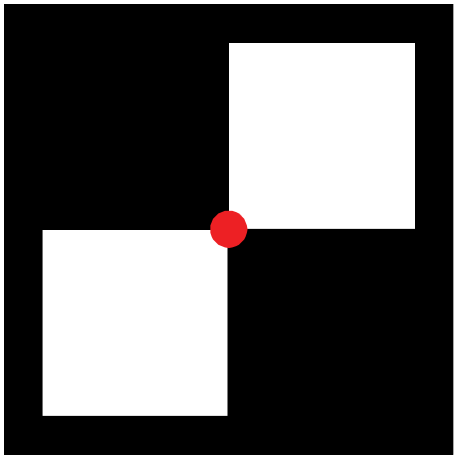


- Press any key.
- The EPOS laser will move to the centre of the cross while following message is displayed:



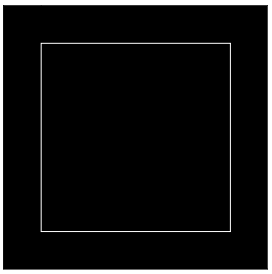
- Move the EPOS laser using the – keys to the centre (if necessary) and press the [✓] key to confirm.





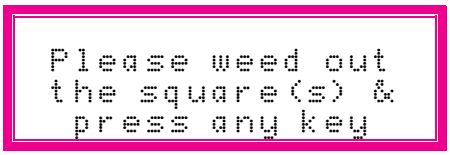
- **AUTOMATIC CALIBRATION**

  - Following pattern will be cut:

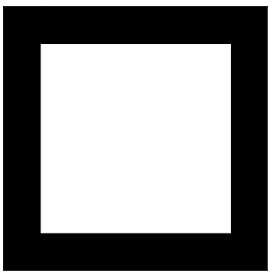


  - Press the [✓] key.

  - The following message will be displayed:

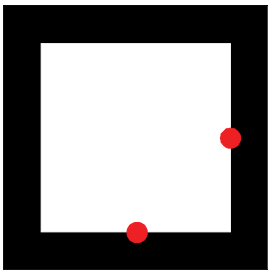


  - Weed out the rectangle.



  - Press any key.

  - The cutter will automatically measure the bottom and right side of the box, this to know the position of the knife compared to the EPOS laser.



Step 8 : The EPOS calibration has finished.

5.5 CUT THROUGH TEST

This test has been developed to test the set values for cutting through applications.

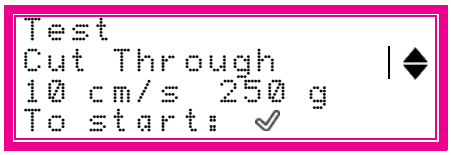
Proceed as follows to make the test

Step 1 : Install and set a knife.

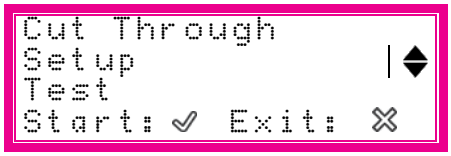
Step 2 : Install a vinyl.

Step 3 : Press the [TEST]-key.

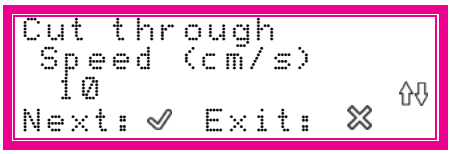
Step 4 : Select "Cut Through" with the ⇳ - keys and press the [✓]-key to open the menu.



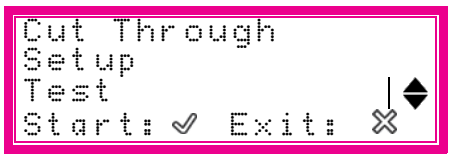
Step 5 : Select the Setup menu with the ⇳ - keys and open it with the [✓]-key



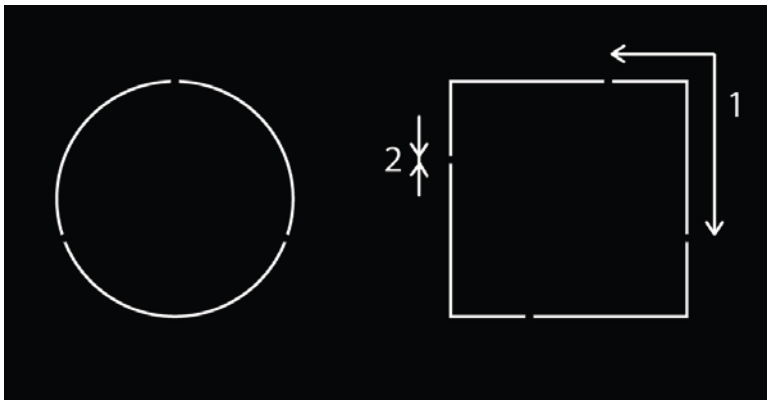
Step 6 : Press the [✓]-key to set the force, speed, tool down cutting length and tool up feeding length. Browse (and accept) the settings with the [✓]-key.



Step 7 : Select "Test" and press the [✓]-key.



Step 8 : The following figures will be cut through.



N°	Description
1	Tool down length (mm)
2	Tool up length (mm)

Step 9 : Evaluate the test pattern. It should be easily pushed out of the vinyl.

Step 10 : Be sure to perform a sheet-off after the test because the pushed-out squares/circles will unhide the paper sensor which could lead to an error.

5.6 XY-DISTANCE ACCURACY

The **XY - Distance Accuracy tests** are developed to check the actual X-Y cutting distance with the sent vector data.

Please follow the procedure below to make the test:

Step 1 : Open Mutoh's CutServer

Step 2 : Select which test to perform.

Step 3 : Select the appropriate COM-port and double-click.

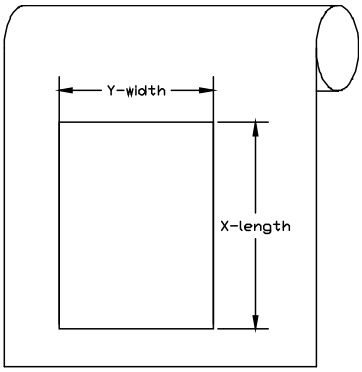
Step 4 : Load a roll or sheet with at least the measurements indicated in the dropdown menu.

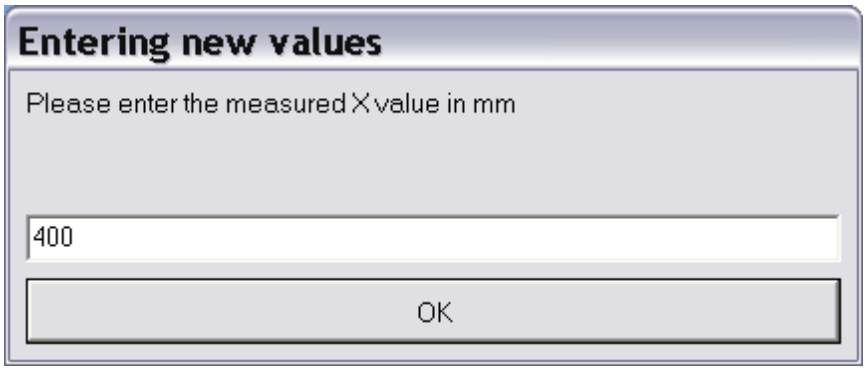
Step 5 : Load a knife.

Step 6 : A box will be cut.

Step 7 : Peel out the box.

Step 8 : Measure the X length and Y width and enter them. *Be sure to enter the values in mm!*





Step 9 : If the correct values have been entered, the following message will appear and the test will be done.

6 CONTOUR CUTTING

CONTOUR CUTTING is a very popular feature of the SC PRO cutter.

This feature is made to cut pre-printed signs on vinyl for sticker production as shown on this picture ► ► ► ► ► ►

Please read this chapter carefully. Because of the importance of this feature, almost a complete manual is written about it. So please refer to the Application Guide for all necessary information.

The information below is some basic information about the different alignment methods …

6.1 DIFFERENT ALIGNMENT METHODS

There are some different approaches to cut your signs which also implicate a different alignment method.

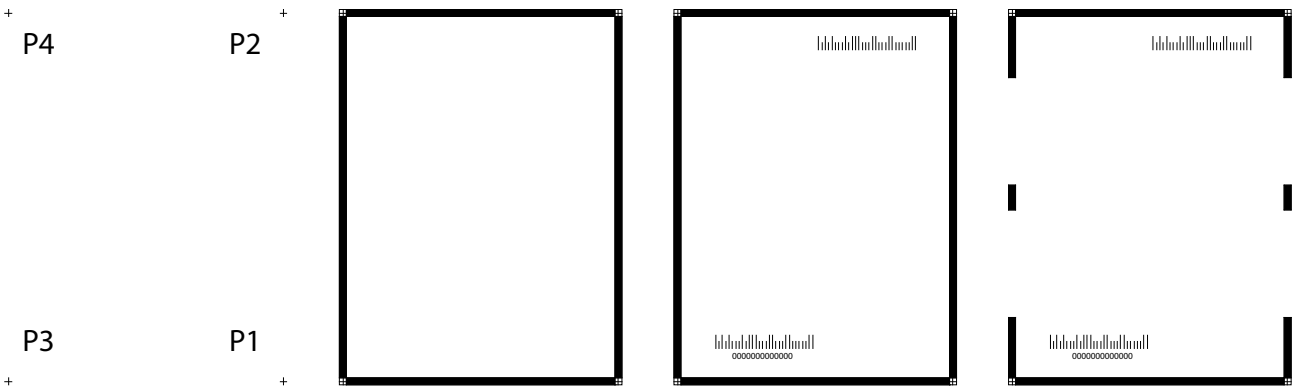
1. **Manual**
   Manual alignment method.
   - o Manually set the size of the paper and 4 corners of the box.

2. **Auto No BC** (only selectable via the cut software)
   Automatic alignment method without barcode
   - o Automatic measurement of the reference box (job data).
   - o Only 1 box

3. **Barcode Single**
   Automatic alignment with barcode and single frame
   - o Automatic measurement of the reference box and barcode (job data).
   - o Only 1 reference box

4. **Barcode Multi**
   Automatic alignment with barcode and multi-segment frame.
   - o Automatic measurement of the reference box and barcode (job data).
   - o Multiple segments in 1 reference box (for long files to guarantee precision).

Manual | **Auto No BC** | **BCode Single** | **BCode Multi**



6.2 WHICH ALIGNING METHOD SHOULD I USE?

The Mutoh Manual Align Method is the non-automatic method.

Its advantage is that the cropmark system is very small (for small sized jobs), and that this method can be used in case of vinyl that do not reflect the EPOS laser light (meaning, the laser would not be capable of measuring the cropmarks automatically).

The user has to use the jog keys on the keyboard to measure each cross manually before contourcutting can start.

The Mutoh Auto Align without Barcode is the first fully-automated alignment system.

Just place the sign in the cutter, click on PLOT in the cutting software, and the cutter will automatic align the sign by use of the black reference box, no user intervention is needed.
This method is ideal for use of single signs, one at the time.

We do not advise to use this method for signs over 2 meter of length, although there is no real limit to the length that can be used.

The Mutoh Auto Align Barcode is a fully-automated alignment system, with a barcode printed on the sign.

YOU SHOULD USE THIS METHOD IN COMBINATION WITH THE MUTOH CUTSERVER!

This method can be used in case you are creating multiple different contour signs. It allows you to make all your prints at once (overnight printing for example), and then load the roll with images in the SC-Pro.
If each sign on the roll has a barcode and if all plot files are in the Mutoh CutServer, just click on GO in the Mutoh CutServer (make sure that the Mutoh CutServer properties are set to SINGLE FRAME, and REPEAT MODE) and every sign on the roll will be cut, without the need for user intervention (make sure you've enabled auto-sheet-off in EasySIGN for each contour-sign)

The reason for the two barcodes is to make it possible for the SC-Pro to auto-detect if the image is loaded upside-down or correctly.

There is no need for you to search the plot file for each image; the SC-Pro and the Mutoh CutServer will do this fully-automatically, until the complete roll with signs is finished.

We do not recommend this method over 2 m job length, although there is no real limit to the length that can be used.

The Mutoh Auto Align Multiframe offers all advantages of the previous one but it will split the image in multiple segments. (This is to enhance precision over long length).

YOU SHOULD USE THIS METHOD IN COMBINATION WITH THE MUTOH CUTSERVER!

With this method, it is possible to make signs of 10m or longer, and the SC-Pro will measure segment per segment, and cut segment per segment. This method gives you more accuracy than the previous method. We do not recommend this method for signs smaller than 1,5m

You should use the Mutoh CutServer for this method, and make sure the Mutoh CutServer properties are set to MULTI- FRAME MODE.

Difference between AL5 and AL6

These alignment methods appear to be the same and they are, up to the part where the segments are split. In an AL5 alignment method, the segments are split in the cut software, which means there is only one block of date. In AL6, the segments are split by the Mutoh CutServer. The prefix of an AL6 command is _NC (not clipped)

⚠ Notes ⚠

For more details about the Print & Cut workflow and Mutoh's CutServer, please refer to the **Application Guide**.

6.3 SQUARE DETAILS

6.3.1 Hints – tips – recommendations

To use the automatic alignment procedure, the pre-printed sheet contains a reference box around the design to be cut.

- Note that the reference box around your design(s) will be printed. Before contour-cutting the EPOS technology will search for the reference box and measure the position of the design(s).
- Be sure that there is 5 mm of white space between the image and the reference box.
- Be sure that the reference box has a dark colour (recommended: black) in order to have enough contrast with the vinyl.
- Make sure that the reference box fits within the margins of the maximum cutting width of your cutting plotter.
- **Be sure that the media has been sheeted off straight. If not, the cutter will have problems measuring the media.**

⚠ Notes ⚠

o The position of the design with the reference box compared to the page edges is defined in the print-software.

o The creation of an image should be done in a graphics application software (e.g. CorelDraw, Adobe Illustrator, Adobe Photoshop or Macromedia Freehand) or in origin software with design functionalities (EasySIGN Power Pack Pro Mutoh Edition or Scanvec Amiable PhotoPRINT DX Mutoh Edition)

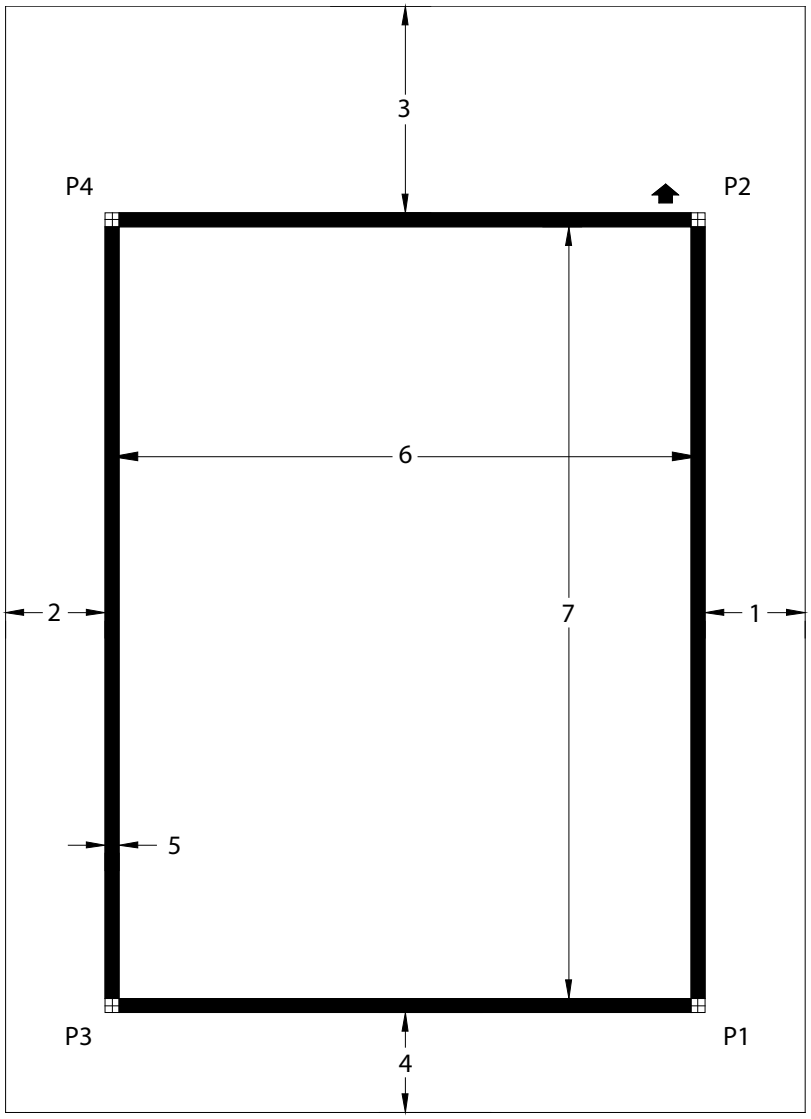
o Do not forget to create the cutting line around your image. The default cutting line is a "magenta hairline" or "spotcolor" with <CutContour> swatch name (in the CMYK pallet).

→ Thickness line = hairline (or 0.25)
→ Colour = 100% magenta

For more details, please refer to the **Application Guide**.

6.3.2 Automatic alignment without barcode

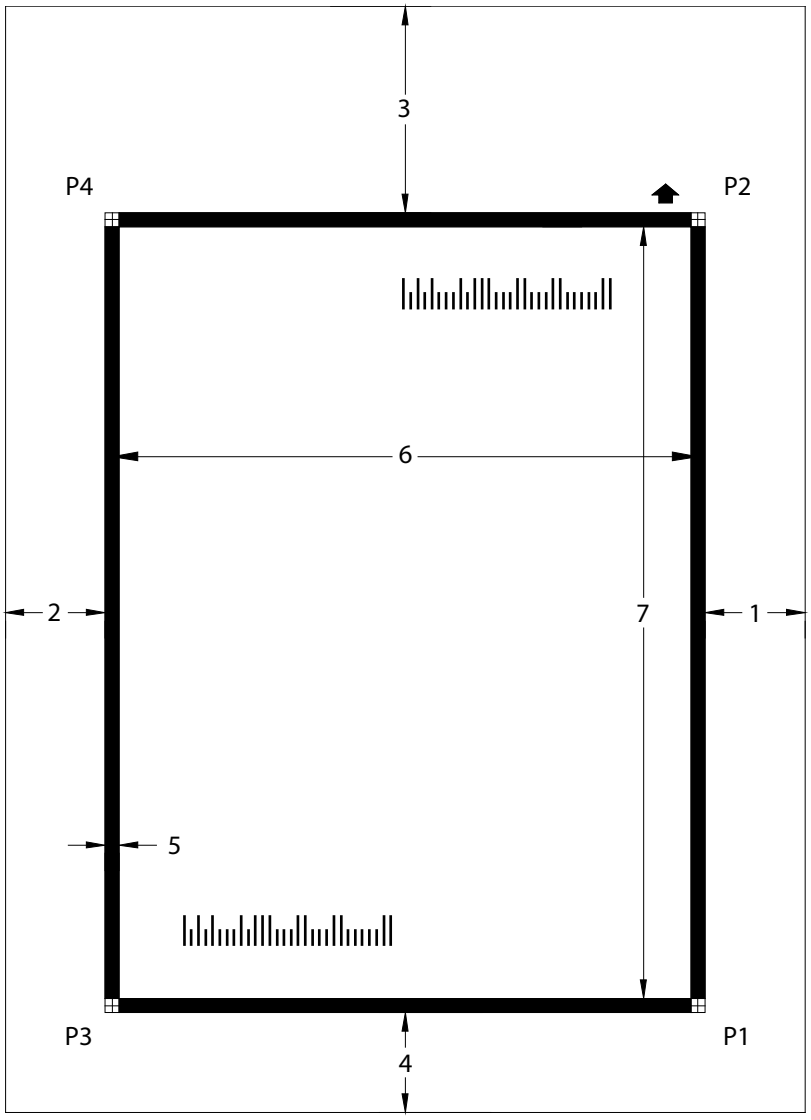
The frame reference box printed or generated around the contour cut data should respect the following guidelines:



N°	Description	Minimum	Maximum	Recommended
1	White edge at the right side	10 mm	unlimited	/
2	White edge at the left side	10 mm	unlimited	/
3	White edge at the rear side ▪ Sheet ▪ Between 2 boxes	 70 mm 30 mm	 250 mm 250 mm	 75 mm 45 mm
4	White edge at the front side	10 mm	250 mm	/
5	Reference box thickness	2 mm	30 mm	3 mm
6	Reference box width	210 mm	unlimited	/
7	Reference box height	300 mm	unlimited	/

6.3.3 Automatic alignment with barcode – single frame

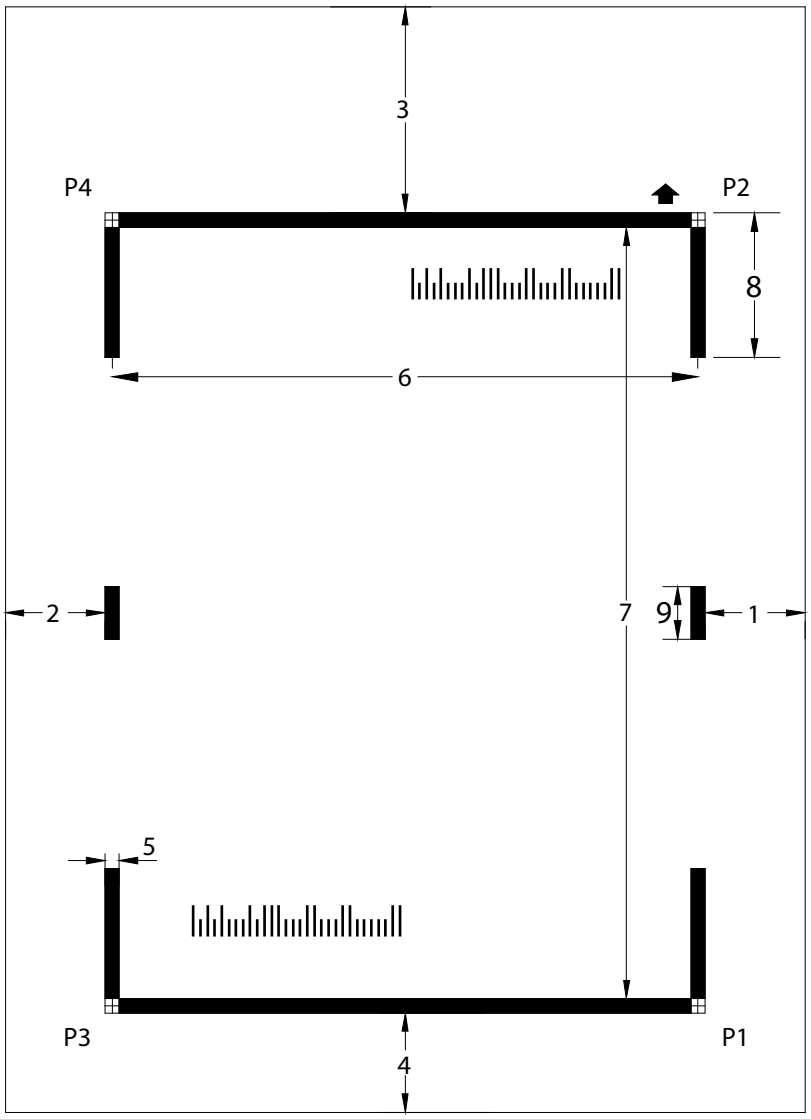
The frame reference box printed or generated around the contour cut data should respect the following guidelines:



N°	Description	Minimum	Maximum	Recommended
1	White edge at the right side	10 mm	unlimited	/
2	White edge at the left side	10 mm	unlimited	/
3	White edge at the rear side ▪ Sheet ▪ Between 2 boxes	 70 mm 30 mm	 250 mm 250 mm	 75 mm 45 mm
4	White edge at the front side	10 mm	250 mm	/
5	Reference box thickness	2 mm	30 mm	3 mm
6	Reference box width	210 mm	unlimited	/
7	Reference box height	300 mm	unlimited	/

6.3.4 Automatic alignment with barcode – multi frame

The frame reference box printed or generated around the contour cut data should respect the following guidelines:



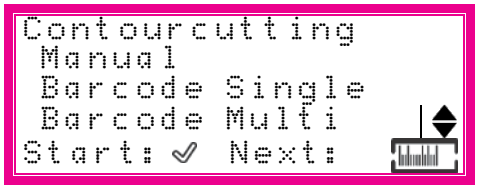
N°	Description	Minimum	Maximum	Recommended
1	White edge at the right side	10 mm	unlimited	/
2	White edge at the left side	10 mm	unlimited	/
3	White edge at the rear side ▪ Sheet ▪ Between 2 boxes	 70 mm 30 mm	 250 mm 250 mm	 75 mm 45 mm
4	White edge at the front side	10 mm	250 mm	/
5	Reference box thickness	2 mm	30 mm	3 mm
6	Reference box width	210 mm	unlimited	/
7	Reference box height	300 mm	unlimited	/
8	Segment start/end	300 mm	Unlimited	300 mm
9	Segment marker height	10 mm	60 mm	/

6.4 CUT AREA MEASUREMENT

As explained above, different alignment methods can be chosen. Each method has a different measurement method.

Step 1 : Press the [CONTOUR CUTTING] key.

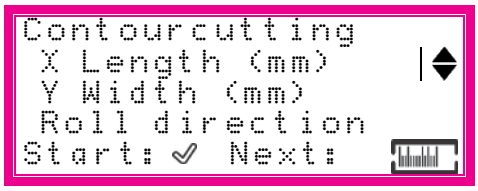
Step 2 : Select the alignment method with the ⇳ - keys.



Step 3 : Press the [CONTOUR CUTTING]-key to make a selection and continue to the next setting.

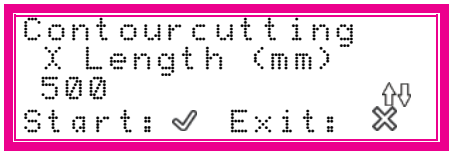
Step 4 : The next screen depends on the previous selection.

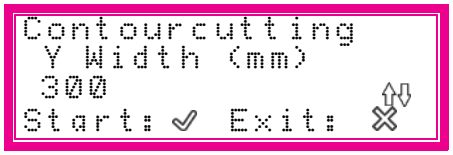
d. When you have selected "Barcode Single or Multi", the following can be set.

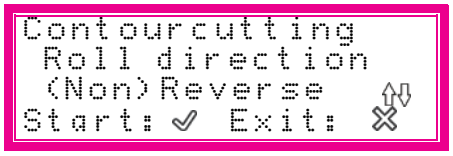


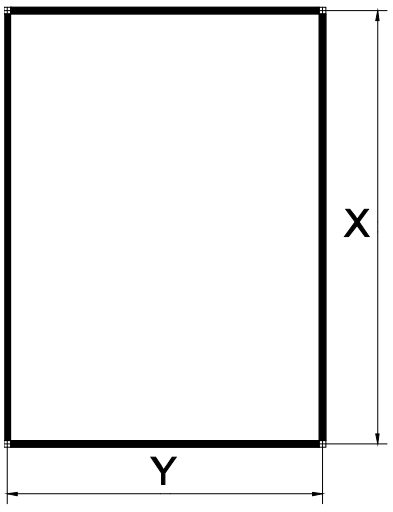
- Press the [CONTOUR CUTTING]-key to set the X-length. Use the ⇳ keys to change the value. Press the [✕]-key to go to the previous screen.

  Adjust the Y-width and roll direction in the same way.







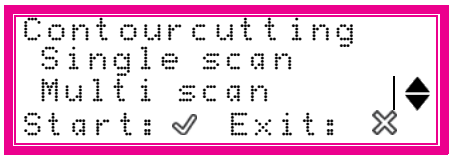


e. When you have selected "Barcode Single" or "Barcode Multi", you have to decide if the job has to be performed only once ("Single Scan") or multiple times ("Multi Scan").

⚠ Notes ⚠

> *Single Scan*: The command will be given to start scanning the bar code of the **first / next reference box ONLY**, from roll or sheet. After finishing this single job, the SC-Pro returns into the Ready status.

> *Repeat Mode:* AUTOMATICALLY all succeeding frames will be scanned and contour cut as well, until the end of roll is reached.



Step 5 : When all settings have been made, press the [✓]-key to start measuring the frame.

a. In case you have selected Barcode Single or Barcode Multi, the cutter will automatically measure the complete reference box.

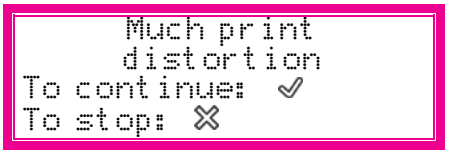
b. In case you have selected Manual alignment, you will have to manually select the alignment points (corners) of the frame.

- The EPOS laser will light up.
- The laser moves to the first corner (P1). Use the arrow keys to position the laser exactly in the centre of the cross and press the [ENTER]-key.

- The laser will move automatically to point 2, than point 4 and finally point 3. Position the laser each time in the centre of the cross and press the [ENTER]-key.

⚠ Notes ⚠

When measuring the four points of the reference box and the cutter establishes a distortion (this means the reference box is not a perfect rectangle due to print deformation, or not between the margins), the cutter will beep and shows following message:



The cutter will cut a little cross in the lower right corner to remind you to its bad print quality in case of bad contour cutting.

Step 6 : The alignment has been done.

7 MAINTENANCE

In this chapter, you will learn:

How to keep your cutter in good shape and prevent problems by regularly performing some easy, daily maintenance. How to pinpoint and check out problems that might occur.

7.1 CLEANING & DAILY MAINTENANCE

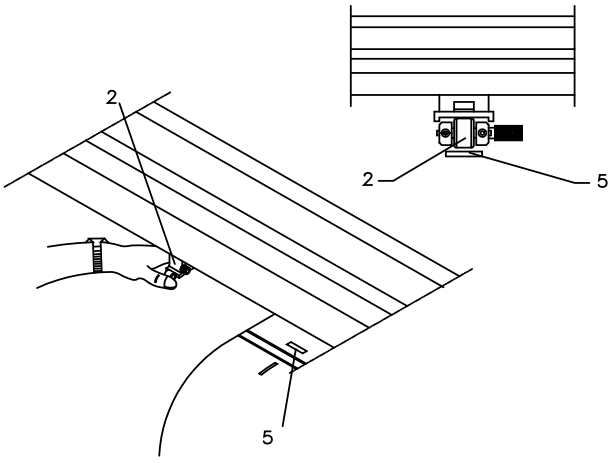
Your cutting plotter, knives and pens will work better and last longer if you keep them clean and perform a few simple daily maintenance tasks.

⚠ Notes ⚠

Before performing cleaning and daily maintenance, please power OFF the unit and remove the power cable.

7.1.1 Cleaning the grid rolls

The figure below shows you this part of the plotter that might require your attention.



The pressure rollers (2) press the vinyl firmly against the friction drive rolls (5). For this reason it is possible that, after some time, the friction drive rolls (5) become clogged with accumulated residue from cutting media. This can cause slippage of the material, resulting in inaccurate cuts or incorrect vinyl transport.

Therefore it is a good habit to clean the drive rolls regularly.

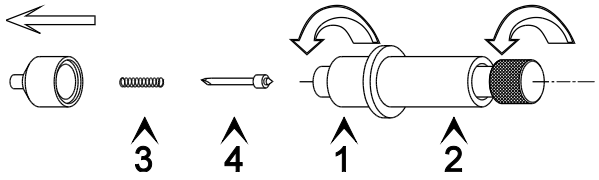
To do this you can use a brush and rotate the rolls manually to make sure that they are thoroughly cleaned.

7.1.2 Cleaning the cutter blade

Use following procedure to remove small vinyl particles in the base part of the cutting blade holder.

STANDARD KNIFE HOLDER

Step 1 : Hold the body (2) into one hand and unscrew the base part (1).



Step 2 : Remove the spring (3) and the cutting blade (4).

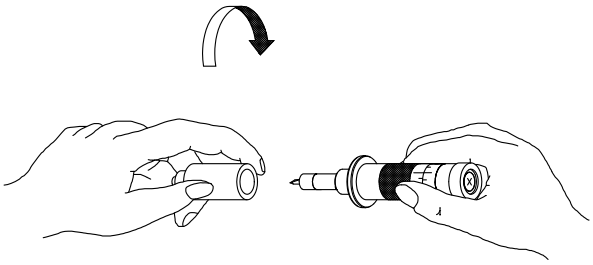
Step 3 : Blow away vinyl particles accumulated in the top of the base part.

Step 4 : Remove the spring from the cutting blade and remove any residual material from the blade tip

Step 5 : Place the spring back over the cutting blade and tightly screw the base part on the holder.

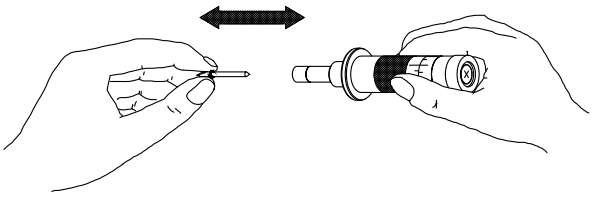
KNIFE HOLDER WITH NONIUS

Step 1 : Take the body into one hand and remove the base part.

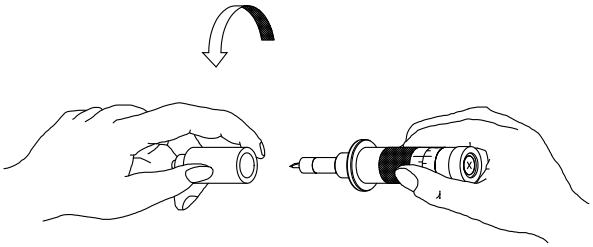


Step 2 : Blow away the vinyl particles accumulated in the top of the base part

Step 3 : Remove any residual material from the blade tip



Step 4 : Place the base part on top of the holder assembly and twist it tightly.



7.1.3 Cleaning the cutting plotter

Use a soft cloth to clean paper dust and particles off the platen, the grid cover the cutting mat and the carriage cover.

Use a cotton swab to clean the media sensors and EPOS laser.

8 TROUBLESHOOTING

In this section you will find a summary of problems that might occur during day-to-day use of your cutter and some hints how to determine the cause of the problem.

1. Power switch is turned ON, but the cutter does not operate.

- Is the power cable connected to the cutter?

2. Media is loaded, but the cutter does not operate.

- Is the media hold lever lowered?
- Is the media properly loaded?
- Are the paper sensors clean?
- Is the cutter in an error state?
- Is the cutter protected against direct sunlight which could disorder the media sensors?

3. Data is being sent from the computer, but the cutter does not react.

- Is there a proper interface cable connected?
- Do the interface conditions on the host computer match those set on the cutter?
- Are you in the pause state?
- Is there media loaded?

4. Data is sent from the computer but errors occur on the cutter's side.

- Are the output settings correct on the host computer and in the cutting software?
- Do the interface conditions on the host computer match those set on the cutter?
- Does the command mode on the host computer match the command mode on the cutter?

5. Some parts of the design are not well cut.

- Check whether the knife tip is not clogged with material residues.
- Examine the knife blade with a magnifier to see if the tip is not damaged or broken.
- Perform the offset adjustment routine to check cutting quality.
- Perform the test cut and check its quality.

6. The output is 2,5 x too large or 2,5 x too small

- The cutter is using the wrong step adjust. Please refer to chapter 4 "Program Step", to correct the step adjust and try again.
  As an alternative solution, you can also choose to change the step adjust in your software. Both settings should be matched to each other.

8.1 CHECKING THE COMMUNICATION SETTINGS

Communication problems are the most frequent errors, which occur. Therefore we have included a step-by-step procedure to check out your configuration's communication settings and assure that your cutter is working fine.

8.1.1 For serial cable connections

Step 1 : Boot-up your computer.

Step 2 : Switch on the cutter.

Step 3 : After the initialization routine is finished, install a knife or pen in the head, select the proper tool and load a sheet of media, which is at least 12 x 12 centimetres.

Step 4 : Make sure that the cutter shuffles the media and verify that the cutter is ready.

Step 5 : On the host computer go to the DOS-prompt (c:\>).
If another environment (for example: windows) is automatically loaded after booting up, reboot.

Step 6 : Check with which of the host computer's communication ports your cutter is connected (COM1, COM2, LPT1,) to.

Step 7 : If your computer and cutter are linked with a serial interface (COMx) or USB interface (COMx) or Ethernet (COMx) type following command.
MODE COMx: 96,n,8,1,p then press <ENTER>

⚠ Notes ⚠

- The command above will change your computer's serial communication settings to match the cutter's factory default communication settings.
- These settings are: 9600 BAUD, NONE parity, 8 data-bits, and 1 stop bit.
- Be sure that the program step is set to 0.010 mm.

Step 8 : Using any text editor, create a file called TEST.PLT with the following contents:
(To start the DOS editor you can type: edit TEST.PLT <ENTER>)

```
IN;
PA0,0;
PD0,10000,10000,10000,10000,0,0,0;
PU5000,5000;
CI5000;
```

Step 9 : Save this file on your hard-disk.

Step 10 : Exit the text editor and return to the DOS-prompt.

Step 11 : Make sure you are in the directory where the file is located.

Step 12 : Type following command :

```
copy TEST.PLT COMx        ( If your cutter is connected to COMx )
copy TEST.PLT LPT1        ( If your cutter is connected with the parallel printer port )
```

Step 13 : Then press <ENTER>.
The file you have created will now be sent to the cutter, causing it to cut/draw a square of 10 by 10 cm. And a circle with a radius of 5 cm.

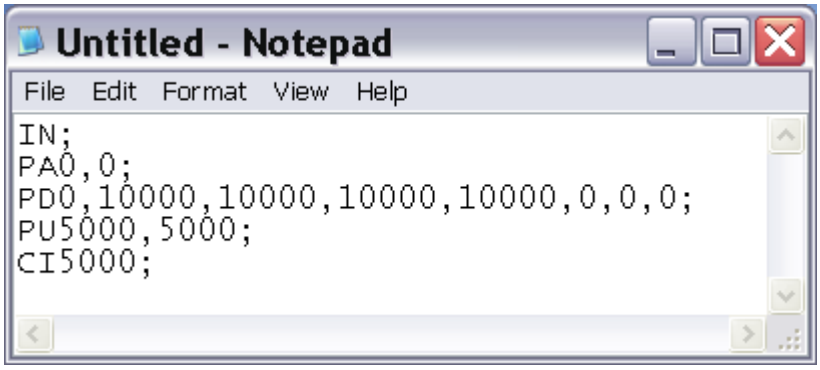
8.1.2 For network connections

Step 1 : Boot-up your computer.

Step 2 : Switch on the cutter.

Step 3 : After the initialization routine is finished, install a knife or pen in the head, select the proper tool and load a sheet of media, which is at least 12 x 12 centimetres.

Step 4 : Open a text editor and type the following:



Step 5 : Save the file to your hard disk with the name and extension: "TEST.plt".

Step 6 : Open "HyperTerminal"
(Accessories > Communications)

Step 7 : Type a name for the new connection, for example: SC-Pro and press [OK].

Step 8 : Switch the "Connect using:" choice to TCP/IP (Winsock).

Step 9 : Type the IP-address of the cutter in the "Host address" field and 10001 as "Port number".

Step 10 : Send the plot file via: Transfer > Send text file.

Step 11 : The file you have created will now be sent to the cutter, causing it to cut/draw a square of 10 by 10 cm and a circle with a radius of 5 cm.

8.2 ERROR MESSAGES

8.2.1 Recoverable errors messages – no error number

During a cutting, measuring or other sequence, it might be possible that one of the below errors occur. Please find a list below with all the possible errors which can be solved yourself, without any need of an intervention by an Authorized Mutoh Technician.

Error	Cause	Solution	Refer to chapter in manual
EPOS calibration error <RETRY>	► EPOS sensor goes in error during the EPOS calibration.	1. Try again or reboot and try again. 2. Contact an Authorized Mutoh Technician if the error remains.	
EPOS problem: PG problem occurred	When there has been executed a PG command between 2 segments or at the start of a new job, this error can occur. This can be caused by: ► Media is too short ► Job has been interrupted by the user ► A movement cannot be performed because of mechanical failures.	1. Check the media size. 2. Reboot the machine.	
EPOS problem: No EPOS reference found	► It might be possible that the reference box cannot be found. ► The EPOS sensor is broken	1. Select the correct file in the Mutoh CutServer and start the job manually (send EPOS job) 2. Make sure that the printed reference box is made within the specifications. (print the file once again with a thicker reference box, eg. 5 mm or more) **3. Be sure that the contour cutting box is located in between the two outer pressure rollers.** 4. Be sure that the media is loaded straight. 5. Contact an Authorized Mutoh Technician to replace the sensor	► Application Guide Print&Cut ► Contourcutting ► Square details

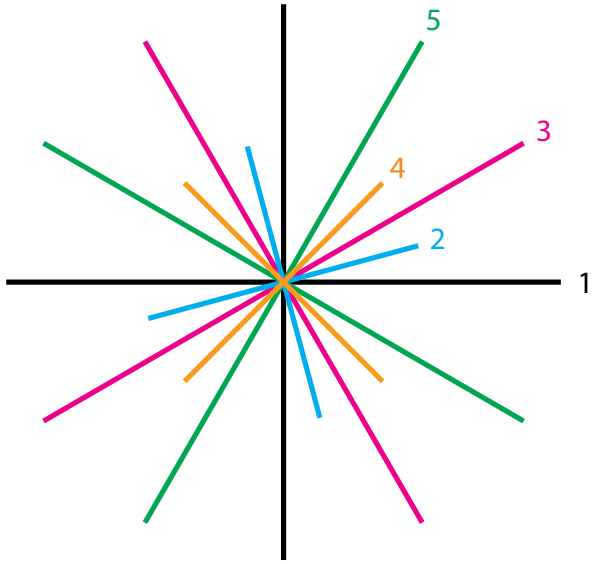
Error	Cause	Solution	Refer to chapter in manual
EPOS problem: Movement failed	► A movement cannot be performed because of mechanical failures.	1. Reboot the machine.	
EPOS problem: Barcode problem occurred	► The barcode cannot be read/found by the EPOS sensor on the machine	1. Is the barcode well positioned according to the specifications? 2. The printed barcode is blurry, too big or too small.	
EPOS problem: EPOS aligning aborted	► The user has cancelled the EPOS job		
Not enough pressure rolls detected	► One of the pressure rollers is not used or is pushed to the far left. ► The pressure roller sensor is broken	1. Always use pressure roller 1 and 4. Be sure you hear a click when positioning them above the loaded media. Pressure roller 2 and 3 can be used but may also be disabled (in between two clicks). 2. Contact an Authorized Mutoh Technician to replace the sensor	► Basics ► Loading media
Pressure roll ## malpositioned	► One of the pressure rollers is not detected by the cutter.	1. When you want to disable a pressure roller, be sure that it is in between two clicks, not at the edge. 2. Only pressure roller 2 and 3 may be disabled. Pressure roller 1 and 4 should always be used.	► Basics ► Loading media
Sheetoff problem detected	► When performing an automatic or manual sheet-off, the machine will check if the vinyl is actually cut off. If not, this message will appear.	1. Press any key if you want to continue anyway. 2. Sheet off the vinyl manually using the cutting groove. 3. Replace the sheet-off knife	► Product overview ► Part names ► Basics ► Replace sheet-off knife

Error	Cause	Solution	Refer to chapter in manual
The plot data has been lost	► There is interference with other electrical machines. ► The USB cable is too long. ► There is a hardware problem. ► Ethernet settings incorrect (e.g. 2 equal IP addresses in the same network)	1. Remove all kind of machines emitting heavy electrical waves. 2. Install a USB cable shorter than 5 m. 3. Contact an Authorized Mutoh Technician. 4. Check interface settings (baudrate…)	
The plot data is out of limit and is clipped to hardclip region	► The data sent to the cutter is larger than the position between the first and fourth pressure roller.	1. Load appropriate media. 2. Reposition pressure rollers. 3. Redesign your job.	► Basics ► Loading media
Unable to show point	► There is an error during the switch from the cutter knife to the laser or vice versa. ► If the cutting head is located at the end of a paper during the switch, this error can occur also.	1. Try again or reboot and try again. 2. Contact an Authorized Mutoh Technician if the error remains.	

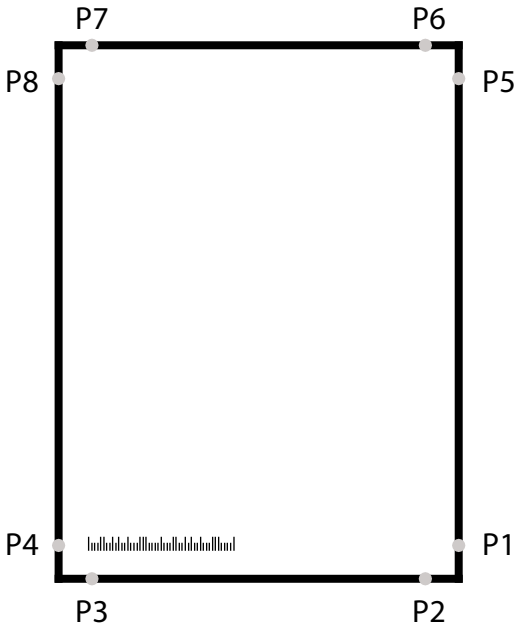
8.2.2 Contourcutting errors and warnings

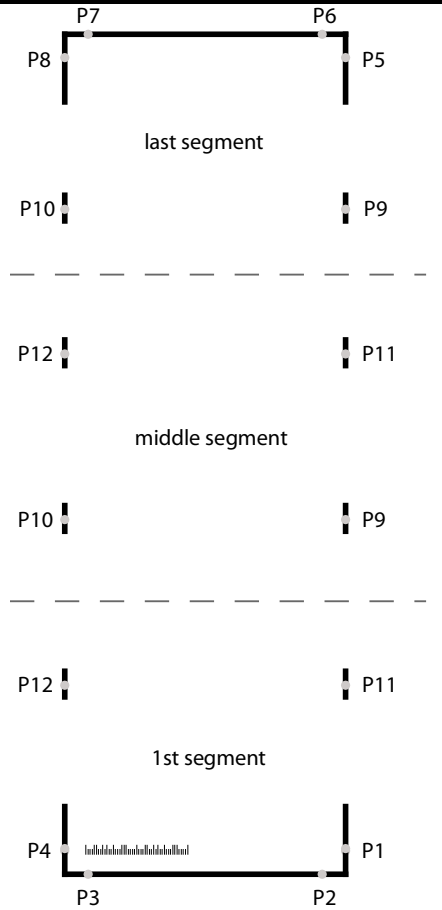
When a specific contour cutting warning or error occurs, an error number will be displayed and a cross will be cut in the lower right corner. All codes are unique and the cross has a predefined angle and size to know of which nature the error is.

Pre-difened crosses	Single frame calibration points	Multi frame calibration points



1. Print distortion - Bad rectangle
2. Media shift detected
3. Print distortion - Stretch
4. Possible data clipped
5. Thickness problem





Please find below an overview of the codes and category of problem

- A ***warning*** means that you will have the choice to continue cutting the current segment, all segments or to cancel the job.
- An ***error*** means that you will have to retry the scanning routine. The reading of the frame has been cancelled

Error	Message	Description	Solution	Category
6201	EPOS alignment aborted	General message	-	Error
6202	EPOS alignment aborted	Lever was pulled up		
6203	EPOS alignment aborted	Alignment procedure has been aborted by the user		
6206	Movement failed	Movement failed during EPOS routine (moveabsc)		Error
6207	Movement failed	Movement failed during EPOS routine (drawcontrol)		
6208	Movement failed	Movement failed during EPOS routine (scanroutine)		
6211	Barcode problem occurred	Barcode too long	Rescan the job and if the error still occurs, try to: ▪ Replot the job ▪ Reprint the job ► Contourcutting ► Square details	Error
6212	Barcode problem occurred	Barcode width problem		
6213	Barcode problem occurred	Barcode height problem		
6214	Barcode problem occurred	Barcode scan problem 1 (lower line of barcode)		
6215	Barcode problem occurred	Barcode scan problem 2 (upper line of barcode)		
6216	Barcode problem occurred	Checksum not OK		
6218	Media size problem	Check if the margins left, right, top and bottom are within the specifications It might be possible that the file you have sent is not correct	► Did you sent the correct file? ► Contourcutting ► Square details	Error
6221	Page problem occurred	PG after job failed	Check the media size	Error
6222	Page problem occurred	PG between 2 segments failed		
6223	No EPOS reference found	During search with EPOS laser, no edge was found (colour ↔ white)	► Test ► EPOS readout	Error
6225	Possible data clip detected	One or more frame points lie outside hardclip region. Plot data will be clipped.	Outer pressure rollers are inside frame ► Basics ► Loading media	Warning
6226	Print distortion – *bad rectangle*	Original print distortion. No perfect rectangle, no parallel sides (difference > 3mm)	Bad print quality or outside specs ► Contourcutting ► Square details	Warning

Error	Message	Description	Solution	Category
6227	Print distortion – *print stretch*	Stretch detected on bottom of frame. P1 & P4 have identical thickness. P2 & P3 have identical thickness. But thickness of P1-P4 and P2-P3 differ too much from each other. Print is stretched.	You can try to cut the job if you want to. Perfect quality is not guaranteed. What to check in case of bad quality: ▪ Printer settings ▪ RIP settings ▪ Design ► Contourcutting ► Square details	Warning
6228	Print distortion – *print stretch*	Stretch detected on top of frame. P5 & P8 have identical thickness. P6 & P7 have identical thickness. But thickness of P5-P8 and P6-P7 differ too much from each other. Frame (print result) is stretched!!!		
6229	Print distortion – *print stretch*	Stretch detected on side of frame. Px & Py have identical thickness. Pw & Pz have identical thickness. But thickness of Px-Py and Pw-Pz differ too much from each other. Frame (print result) is stretched! Depending on kind of measured segment :Px, Py, Pw, Pz are different 1) Px = P1, Py = P4, Pw = P5, Pz = P8 2) Px = P1, Py = P4, Pw = P9, Pz = P10 3) Px = P9, Py = P10, Pw = P11, Pz = P12 4) Px = P11, Py = P12, Pw = P5, Pz = P8		
6231	Thickness problem *frame bottom*	All measured points of frame bottom vary too much from each other! This will influence the accuracy of the cutting.	You can try to cut the job if you want to. Perfect quality is not guaranteed. What to check in case of bad quality: ▪ Printer settings ▪ RIP settings ▪ Design ► Contourcutting ► Square details	Warning
6232	Thickness problem *frame bottom*	Invalid thickness of P1 (right side of frame bottom). Thickness varies too much from other bottom points! This will influence the accuracy of the cutting.		
6233	Thickness problem *frame bottom*	Invalid thickness of P2 (bottom right of frame bottom). Thickness varies too much from other bottom points! This will influence the accuracy of the cutting.		
6234	Thickness problem *frame bottom*	Invalid thickness of P3 (bottom left side of frame bottom). Thickness varies too much from other bottom points! This will influence the accuracy of the cutting.		
6235	Thickness problem *frame bottom*	Invalid thickness of P4 (left side of bottom point). Thickness varies too much from other bottom points! This will influence the accuracy of the cutting.		
6236	Thickness problem *frame bottom*	Invalid thickness of P1 and P4. Thickness of these points varies too much from each other AND varies also from P2 & P3! This will influence the accuracy of the cutting.		
6237	Thickness problem *frame bottom*	Invalid thickness of P2 and P3. Thickness of these points varies too much from each other AND varies also from P1 & P4! This will influence the accuracy of the cutting.		

Error	Message	Description	Solution	Category
6241	Thickness problem *frame top*	All measured points of frame top vary too much from each other! This will influence the accuracy of the cutting.	You can try to cut the job if you want to. Perfect quality is not guaranteed. What to check in case of bad quality: ▪ Printer settings ▪ RIP settings ▪ Design ► Contourcutting ► Square details	Warning
6242	Thickness problem *frame top*	Invalid thickness of P5 (right side of frame top). Thickness varies too much from other top points! This will influence the accuracy of the cutting.		
6243	Thickness problem *frame top*	Invalid thickness of P6 (top right of frame top). Thickness varies too much from other top points! This will influence the accuracy of the cutting.		
6244	Thickness problem *frame top*	Invalid thickness of P7 (top left side of frame top). Thickness varies too much from other top points! This will influence the accuracy of the cutting.		
6245	Thickness problem *frame top*	Invalid thickness of P8 (left side of top point). Thickness varies too much from other top points! This will influence the accuracy of the cutting.		
6246	Thickness problem *frame top*	Invalid thickness of P5 and P8. Thickness of these points varies too much from each other AND varies also from P6 & P7! This will influence the accuracy of the cutting.		
6247	Thickness problem *frame top*	Invalid thickness of P6 and P7. Thickness of these points varies too much from each other AND varies also from P5 & P8! This will influence the accuracy of the cutting.		

6251	Thickness problem *frame centre*	Thickness of centre points (P9 & P10) differs too much from each other AND differs also from bottom points P1 and P4.	You can try to cut the job if you want to. Perfect quality is not guaranteed. What to check in case of bad quality: ▪ Printer settings ▪ RIP settings ▪ Design ► Contourcutting ► Square details	Warning
6252	Thickness problem *frame centre*	Invalid thickness of P9 (right centre point). Thickness varies too much from P10! This will influence the accuracy of the cutting.		
6253	Thickness problem *frame centre*	Invalid thickness of P10 (left centre point). Thickness varies too much from P9! This will influence the accuracy of the cutting.		
6254	Thickness problem *frame centre*	Thickness of centre points (P11 & P12) differs too much from each other AND differs also from bottom points P1 and P4.		
6255	Thickness problem *frame centre*	Invalid thickness of P11 (right centre point). Thickness varies too much from P12! This will influence the accuracy of the cutting.		
6256	Thickness problem *frame centre*	Invalid thickness of P12(left centre point). Thickness varies too much from P11! This will influence the accuracy of the cutting.		

Error	Message	Description	Solution	Category
6261	No valid frame found	No valid frame found during fast scan routine (after several retries). Make sure all frame specifications are applied.	To check: ▪ Frame isn't found within 120cm. Media space before frame bottom is too much. ▪ Frame bottom doesn't have the correct specifications (minimum thickness of 3mm on ALL sides, thickness too varying, frame height < 20cm, frame width < 10cm, frame angle < 5°) ► Contourcutting ► Square details	Error
6262	No valid frame found	Only 1 frame point found during diagonal scan.		
6263	No valid frame found	No frame points found during diagonal scan.		
6264	No valid frame found	Thickness of left side of frame invalid		
6265	No valid frame found	Varying thickness		
6266	No valid frame found	Invalid thickness		
6267	No valid frame found	Invalid frame angle		
6268	No valid frame found	Requested X movement for fast scan cannot be executed.		
6269	No valid frame found	Invalid spot type		

6271	Media shift detected	Media displacement detected during cutting. Centre markers of previous segment are shift more than 2mm.	To check: ▪ Grids on media? ▪ Pinches and grids clean?	Warning

8.2.3 Unrecoverable system errors

Unrecoverable errors may be caused by some part of the cutting plotter, which is malfunctioning. In case of an unrecoverable error, most of the time the cutter will be completely blocked and the buzzer will be beeping until you strike a key. The error id, number and description will appear on the keyboard display, and will be cleared when entering a key. It is recommended to contact an authorized Mutoh service technician. It is also possible that the error disappears after rebooting the cutter.

Each error has an ID number. Please refer to the table below to know which ID corresponds with which error.

-1 / 0: The reasons why these errors occur are software related.
Check for a more recent SC-PRO firmware.

1000-3999: The reasons why these errors occur are mostly hardware/software related.
The mainboard may be mal-functioning, call service.
The mechanical parts may be mal-functioning, call service.
Check for a more recent SC-PRO firmware.

4000-4999: The reasons why these errors occur are mostly related with data loss.
Check cable connections. Keep USB cables shorter than 5m. Network problems.

5000-5999: The reasons why these errors occur are mostly related with data loss.
Check cable connections. Keep USB cables shorter than 5m. Network problems.
Check the RS232 settings.

6000-6049: The reasons why these errors occur are mostly hardware related.
Check the flatcables between mainboard and head board.
The headboard may be mal-functioning, call service.

6050-6069: The reasons why these errors occur are mostly hardware related.
Check the flexible cable between keyboard and mainboard.
The keyboard may be mal-functioning, call service.
There can be a firmware incompatibility between keyboard and SC-PRO, please update both SC-PRO and Keyboard version to any last known functioning version.

6070-6089: The reasons why these errors occur are mostly software related.
Check for a more recent SC-PRO firmware.

6090-6099: The reasons why these errors occur are mostly hardware/software related.
Check for a more recent SC-PRO firmware.

6100-6110: The reasons why these errors occur are mostly user manipulation/mechanical related.
Check if media is properly loaded, if there are no mechanical obstructions in the head movement or media movement path.

6111-6114: The reasons why these errors occur are mostly hardware/software related.
The mainboard may be mal-functioning, call service.
Check for a more recent SC-PRO firmware.

-1	Undefined Error
0	No Error Found
1009	Y position error PWM switched off
1010	X position error PWM switched off
1012	12V detection failure PWM switched off
1013	48V detection failure PWM switched off
1014	X fuse failure PWM switched off
1015	Y fuse failure PWM switched off
1049	Y PWM_MAX error PWM switched off
1050	X PWM_MAX error PWM switched off
1052	Y DELTAPWM error PWM switched off
1053	X DELTAPWM error PWM switched off
1055	Y VELOCITY error PWM switched off
1056	X VELOCITY error PWM switched off
2000	PG error : Media too short to perform a 'PG;'
3005	VECTOR module caused an error
3010	Sheetoff problem
4001	IN caused an error
4002	IW caused an error
4003	IP caused an error
4004	IR caused an error
4005	SC caused an error
4006	PA caused an error
4007	PU caused an error
4008	PD caused an error
4009	PR caused an error
4010	SP caused an error
4011	LB caused an error
4012	DT caused an error
4013	SI caused an error
4014	ES caused an error
4015	AD caused an error
4016	SA caused an error
4018	CP caused an error
4019	DI caused an error
4020	DR caused an error
4021	DV caused an error
4022	LO caused an error
4024	SL caused an error
4025	SR caused an error
4028	SM caused an error
4029	LT caused an error
4030	UL caused an error
4031	CI caused an error
4032	AA caused an error
4033	AR caused an error
4034	AT caused an error
4035	RT caused an error
4036	ER caused an error
4037	EA caused an error
4038	BZ caused an error
4039	SO caused an error
4040	PG caused an error
4041	RP caused an error
4042	OH caused an error
4043	OI caused an error
4044	OP caused an error
4045	OE caused an error
4046	OS caused an error
4047	EW caused an error
4048	FP caused an error
4049	PM caused an error
4050	RA caused an error
4051	RR caused an error
4052	WG caused an error
4053	EP caused an error
4055	RO caused an error

4056 PE caused an error
4060 PW caused an error
4062 WU caused an error
4064 CT caused an error
4072 PS caused an error
4075 VS caused an error
4086 DC caused an error
4087 DP caused an error
4088 OD caused an error
4089 AS caused an error
4090 ZF caused an error
4091 ZO caused an error
4092 OF caused an error
4093 OA caused an error
4094 MP caused an error
4095 AL caused an error
4096 ZZ caused an error
4097 LS caused an error
4098 EO caused an error

5000 LASTERROR caused an error
5001 POUNCEGAP caused an error
5002 SETORIGIN caused an error
5003 ACCURACY caused an error
5004 PROGSTEP caused an error
5005 PAGEMODE caused an error
5006 TOOLKIND caused an error
5007 FIRMWARE caused an error
5008 SERIALNO caused an error
5009 DEFAULT caused an error
5010 SETACCU caused an error
5011 ENCODER caused an error
5012 MACHINE caused an error
5013 SHUFFLE caused an error
5014 SENDEP caused an error
5015 NORMAL caused an error
5016 SENSOR caused an error
5017 ORIGIN caused an error
5018 OFFSET caused an error
5019 AGING caused an error
5020 NVRAM caused an error
5021 MEDIA caused an error
5023 VSZF caused an error
5024 COMM caused an error
5025 DIAG caused an error
5026 BEEP caused an error
5027 PIDX caused an error
5028 PIDY caused an error
5029 PIDZ caused an error
5030 STPZ caused an error
5031 SETD caused an error
5034 GETD caused an error
5040 MEMORY caused an error
5041 JOGDIR caused an error
5042 SMOOTH caused an error
5044 DEBUG caused an error
5047 FMSTEST caused an error
5048 MOVD caused an error
5049 FILTER caused an error
5050 REMDLG caused an error
5051 PORT caused an error
5052 SHEET caused an error
5053 JOG caused an error
5054 SINT caused an error
5056 JOGSPEED caused an error
5057 HPGLPARS caused an error
5058 MOVE caused an error
5059 GPOS caused an error
5060 HCLIP caused an error

5061 LASER caused an error
5066 KNIFE caused an error
5067 EPOSSEDGE caused an error
5068 EPOSPARS caused an error
5069 EPOSCALIB caused an error
5070 EPOSDIST caused an error
5071 EPOSALIGN caused an error
5072 EPOSSCAN caused an error
5073 ESOSSPEED caused an error
5076 PIOS caused an error
5077 DPSERV caused an error
5078 DPVECT caused an error
5079 CLSERV caused an error
5080 CLVECT caused an error
5088 PENUPSPEED caused an error
5089 ENDPLOT caused an error
5090 HPGLM caused an error

6000 I2C SW BUSY timeout
6001 I2C SW RECEIVE timeout
6002 I2C HW MBB timeout
6003 I2C HW MIF timeout
6004 I2C Stop command failed
6006 I2C HW RXAK no ack from slave in adr cycle
6015 I2C SetData command failed
6016 I2C GetData command failed
6017 I2C PIOSet command failed
6018 I2C Read command failed
6019 I2C GETDATA IN SEARCHSENSOR
6021 I2CSTOP IN SEARCHSENSOR
6023 PROBLEM IN SETKNIFE
6024 PROBLEM IN SETLASER

6050 KEYB communic. checksum problem
6060 KEYB COMM error
6061 KEYB sendtokeybproblem

6070 SFWT delay_ctf problem
6071 SFWT match_intu problem
6072 SFWT delay problem
6073 SFWT release error

6080 Moveabsmc problem
6090 EPOS Mbus read blocks
6091 EPOS Mbus stop blocks
6092 EPOS calc pen to led search edge blocks
6093 EPOS auto calibrate search edge blocks
6094 CALIBRATE PROBLEM IN AUTOCALIBRATE 1
6095 CALIBRATE PROBLEM IN AUTOCALIBRATE 2
6096 EPOS calibrate get data blocks
6097 EPOS calibrate pen to led blocks

6100 BUMP PROBLEM MACHINE WIDTH
6105 X MEASUREMENT PROBLEM RELOAD MEDIA
6106 SHUFFLE PROBLEM2
6107 SHUFFLE PROBLEM3
6108 SHUFFLE PROBLEM4
6109 SHUFFLE PROBLEM5
6110 SHUFFLE PROBLEM TEST

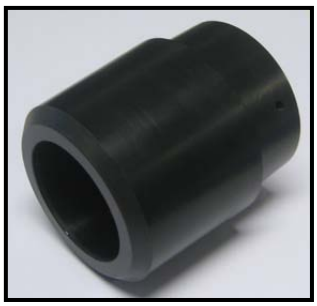
6111 DRAM overrun error
6112 SRAM overrun error
6114 Wrong firmware on this mainboard

9 CONSUMABLES

Please find below a list of all the available consumables for the Mutoh SC-Pro cutter.

	Part number	Description
	ZMY-10050B	Knife holder without depth indication. Contains the following extra items: ► One cutting knife blade Angle: 45° Offset: 0,5 mm
	ZME-20034A **ZME-20034B** **ZME-20034C**	Set of two cutting knife blades (Tungsten Carbide) for knife holder without depth indication: Angle: 30° Offset: 0,50 mm Angle: 45° Offset: 0,50 mm Angle: 60° Offset: 0,50 mm
	ZMY-10034B	Knife holder without depth indication. Contains the following extra items: ► One cutting knife blade Angle: 45° Offset: 0,5 mm
	ZME-10034A **ZME-10034B** **ZME-10034C**	Set of two cutting knife blades (Tungsten Carbide) for knife holder with depth indication: Angle: 30° Offset: 0,50 mm Angle: 45° Offset: 0,50 mm Angle: 60° Offset: 0,50 mm

	Part number	Description
	PSGBBK	Pressurized ballpoint pen.
	RJ8-CBS	Long life tungsten carbide cutting blade for automatic sheet-off.
	ZME-23310	Set of 3 spare cutting mats.
	ZME-23132	Set of 3 spare cutting mats designed for punching applications.
	MY-23035	Conveyor flange assembly

	Part number	Description
	**MY-10168**	Set of two 3" core supports
	BM-9005-005015	Screw to tighten the 3" core supports
	ME-15088	One conveyor roll brake
	ZMY-10047	Set of two conveyor flanges